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## **DESIGNATED SUBSTANCES & HAZARDOUS MATERIALS SURVEY**

**Fort George – Four Historic Buildings (Blockhouses)**

**51 Queens Parade, Niagara-on-the-Lake, ON**

**SUBMITTED TO:** Parks Canada

**ISSUED:** June 20, 2018

**OESN PROJECT #:** 00090.005

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## PROJECT SUMMARY SHEET

<b>Report Title:</b>	Designated Substances and Hazardous Materials Survey <ul style="list-style-type: none"><li>▪ Block House #1</li><li>▪ Block House #2</li><li>▪ Block House #3</li><li>▪ Octagon Blockhouse</li></ul>
<b>Project Location:</b>	Fort George – Four Historic Buildings (Blockhouses) 51 Queens Parade, Niagara-on-the-Lake, ON
<b>Report Submission Date:</b>	June 20, 2018
<b>Submitted to:</b>	Parks Canada 51 Queens Parade, Niagara-on-the-Lake, ON L0S 1J0
<b>Authored by:</b>	Ontario Environmental & Safety Network Ltd. (OESN)
<b>OESN Field Consultants:</b>	Kris Douglas
<b>OESN Project Contact:</b>	Shaun Husband
<b>Laboratories:</b>	Paracel Laboratories Ltd. Ottawa, Ontario Canadian Association for Laboratory Accreditation Inc. (CALA) – Membership number 1262  CEI Labs Cary, North Carolina, USA National Voluntary Laboratory Accreditation Program (NVLAP) – Membership Number 101768-0
<b>Analysis Methods:</b>	EPA 600 Method (PLM) (Asbestos) EPA 6020 Digestion-ICP-MS (Metals) EPA 7471B - CVAA, digestion (Mercury)
<b>Chemical Agent(s) Considered:</b>	Asbestos, Arsenic, Lead, Mercury, Silica
<b>Other Hazardous Agents Considered:</b>	Polychlorinated Biphenyls Biological Contaminants

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## Executive Summary

On June 4, 2018 four (4) historical buildings at Fort George located at 51 Queens Parade, Niagara-on-the-Lake, ON were surveyed and samples collected to evaluate for designated substances and other potential hazards in construction building materials.

Survey included inspection, collection and testing of materials suspected of containing designated substances within the four (4) blockhouse buildings.

**Asbestos** was detected in window glazing in Blockhouse #1 and vinyl floor tile in Blockhouse #3.

Testing confirmed the presence of **lead** in all five paint coatings sampled (four buildings). Lead-acid batteries are present within the emergency lighting units in Blockhouse #1 and #2 and lead is possibly present in solder at plumbing pipe joints where water services are present.

**Mercury** content was confirmed in four of the paint coatings sampled. Fluorescent light tubes containing small quantities of mercury are present.

Silica is assumed to be present within any concrete materials.

Lighting ballasts have the potential to contain PCBs. Lighting systems were not dismantled at the time of evaluation to observe coding, systems were energized.

The building's owner or constructor will need to inform prospective contractors of the existing hazards by including this report with bid documentation.

Recommendations provided are based on provincial occupational health & safety laws and requirements.

## About the author

This assessment was prepared by Ontario Environmental & Safety Network Ltd. (OESN).

OESN has been in business providing industrial hygiene, hazardous material assessment and occupational health and safety services since 1996.

Site work was conducted by Kris Douglas who has experience assessing buildings for designated substances and hazardous materials.

The project was managed and reviewed by Shaun Husband.

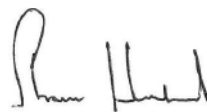
All work conducted was done to the best of our abilities and based on our knowledge, experience and the requirements of international and local legislation and industry best practice.

Please contact our office at 1-888-271-2111 with respect to questions or discussion regarding the content of this report.

Regards,



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## 1.0 INTRODUCTION

### 1.1 OVERVIEW

On June 4, 2018, an assessment of four (4) historic buildings at Fort George located at 51 Queens Parade, Niagara-on-the-Lake, Ontario, was conducted. Buildings evaluated include Blockhouse #1, Blockhouse #2, Blockhouse #3 and the Octagon Blockhouse. The purpose of the assessment was to identify select designated substances and hazardous materials through visual observation, bulk sampling and analytical testing.

### 1.2 BACKGROUND

The Occupational Health and Safety Act (The Act) for the Province of Ontario defines designated substances as biological, chemical or physical agents or combination thereof to which the exposure of a worker is prohibited, regulated, restricted, limited or controlled.

Section 30(1) of The Act prescribes duties for owners to determine if these designated substances are present at a site prior to commencement of a construction project where disturbance is likely.

Industry interprets this requirement to include for the provision of a scope of work that assesses all structural and finishing materials (including equipment) that were used in the construction of a building.

### 1.3 SCOPE OF WORK

Evaluate four (4) buildings (blockhouses) located at Fort George National Historic Site for designated substances and hazardous materials.

The following scope of work was developed and carried out to produce a comprehensive designated substance report.

1. Inspect and observe the structural and finishing materials of the building (interior and exterior).
2. Collection of bulk samples of materials suspected to contain designated substances.
3. Quantification and condition assessment of building materials suspected to contain asbestos minerals.
4. Chain of custody control for all samples submitted.
5. Materials with known hazardous content such as lead, mercury, and arsenic were documented.
6. Reporting methods included recording assessment observations on forms, collecting photographs of materials sampled and plotting sample locations on building plan drawings.

Excluded from the scope of work was inspection and testing for acrylonitrile, benzene, coke oven emissions, ethylene oxide, isocyanates and vinyl chloride because these substances are generally associated with industrial sites and processes.

## 1.4 ASSESSMENT METHODOLOGY

The assessment is carried out systematically to include all accessible areas. Each room is assigned an identification number that, if provided, will coordinate with client identification number and name. Observations for suspect materials are recorded on a form designed specifically to meet the project requirements and obligations.

Roofing materials were not tested at the time of evaluation.

## 2.0 SURVEY FINDINGS

### 2.1 BUILDING DESCRIPTION

Four (4) buildings were evaluated to identify select designated substances and hazardous materials. These buildings include:

- Blockhouse #1
- Blockhouse #2
- Blockhouse #3
- Octagon Blockhouse

Types of building finishes observed at the time of inspection and considered for the report include:

**Floor:** Surfacing materials include: 12" vinyl floor tile, wood decking, concrete slab on grade and linoleum.

**Walls:** Materials observed include gypsum board with joint fill compound and wood plank with joint fill compound (grey cement material).

**Ceilings:** Materials observed include gypsum board with joint fill compound and wood decking/ timber joist.

**Thermal:** Materials suspected to contain asbestos were not observed.

**Other/Manufactured:** Exterior window caulking, window glazing, and timber joint mortar was submitted for analysis.

Five (5) paint finishes were collected and tested for arsenic, lead and mercury content.

## 2.2 OBSERVATION FINDINGS

Designated substances and hazardous materials are assumed to be present in the following building items.

### 2.2.1 ASBESTOS

Materials potentially containing asbestos minerals were sampled and submitted to a laboratory for testing. Building materials considered for testing include: vinyl flooring, gypsum board with joint compound, window caulking, window glazing, and timber joint mortar. **Asbestos was detected** in the vinyl floor tile (sample code: HF-01) and window glazing (sample code: HM-02) materials. Refer to Section 3.1 for analytical results.

- HF-01 – 12" VFT White with Black Streak
- HM-02 – Window Glazing

### 2.2.2 LEAD

Five (5) paint coatings were sampled and submitted to a laboratory for testing. **Lead is present** in all five (5) of the paint finishes sampled. Refer to Section 3.2 for analytical results.

Lead is expected to be present at the soldered joints and seams of piping. Other materials suspected of containing lead were not observed during the site visit.

Emergency lighting units contain lead-acid batteries. At the time of evaluation several styles of emergency lighting were observed within Blockhouse #1 and #2.

### 2.2.3 MERCURY

Five (5) paint coatings were sampled and submitted to a laboratory for testing. **Mercury is present** in four (4) of the paint finishes sampled. Refer to Section 3.2 for analytical results.

Mercury containing fluorescent light tubes are present in lighting fixtures within Blockhouse #1, #2 and #3.

### 2.2.4 ARSENIC

Five (5) paint coatings were sampled and submitted to a laboratory for testing. Arsenic is not present in the paint finishes sampled. Refer to Section 3.2 for analytical results.

### 2.2.5 POLYCHLORINATED BIPHENYLS (PCBs)

Polychlorinated Biphenyls (PCBs) are assumed present in fluorescent lighting ballasts. Light ballasts were not assessed by OESN (systems were energized). Light ballasts should be assessed for PCBs prior to dismantling and disposal.

### 2.2.6 CRYSTALLINE SILICA

Concrete building materials were not sampled for the presence of crystalline silica. It is assumed that original concrete materials are silica-containing.

### 2.2.7 BIOLOGICAL CONTAMINANTS

Biological contaminants such as fungal staining (i.e. mould) were not observed at the time of inspection.

## 3.0 ANALYTICAL RESULTS

### 3.1 ASBESTOS

The regulated limit for establishing asbestos content in materials in the Province of Ontario is 0.5% asbestos by dry weight<sup>1</sup>. Analytical results for materials suspected of containing asbestos minerals are listed in Tables 1 through 4.

Table 1: Asbestos Analytical Results: Blockhouse #1

Sample Number	Material Number	Material Description	Regulated Limit	Result % by dry weight
<b>Ceiling Materials</b>				
00090.005.B1-C01, C02, C03	HC-01	Gypsum Board with Joint Compound	0.5%	None Detected
<b>Wall Materials</b>				
00090.005.B1-W01, W02, W03	HW-01	Gypsum Board with Joint Compound	0.5%	None Detected
<b>Manufactured Materials</b>				
00090.005.B1-M01, M02, M03	HM-01	Timber Joint Mortar	0.5%	None Detected
00090.005.B1-M04, M05, M06	HM-02	Window Glazing	0.5%	<b>2% Chrysotile</b>

**Note: (1)** Backroom was recently updated with new flooring and base cove.

<sup>1</sup> Ontario Regulation 278/05 Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations

Table 2: Asbestos Analytical Results: Blockhouse #2

Sample Number	Material Number	Material Description	Regulated Limit	Result % by dry weight
<b>Ceiling Materials</b>				
00090.005.B2-C01, C02, C03	HC-01	Gypsum Board with Joint Compound	0.5%	None Detected
<b>Wall Materials</b>				
00090.005.B2-W01, W02, W03	HW-01	Gypsum Board with Joint Compound	0.5%	None Detected
<b>Manufactured Materials</b>				
00090.005.B2-M01, M02, M03	HM-01	Timber Joint Mortar	0.5%	None Detected
00090.005.B2-M04, M05, M06	HM-02	Window Caulking (Grey)	0.5%	None Detected

Table 3: Asbestos Analytical Results: Blockhouse #3

Sample Number	Material Number	Material Description	Regulated Limit	Result % by dry weight
<b>Ceiling Materials</b>				
00090.005.B3-C01, C02, C03	HC-01	Gypsum Board with Joint Compound	0.5%	None Detected
<b>Floor Materials</b>				
00090.005.B3-F01, F02, F03	HF-01	Vinyl Floor Tile 12" – White with Black Streak	0.5%	<b>2% Chrysotile</b>

**Note:** (1) Renovations were completed in 2017, including new gypsum board and linoleum flooring. OESN did not sample in this location.  
(2) OESN did not review below new flooring in order to maintain the integrity of the system.

Table 4: Asbestos Analytical Results: Octagon Blockhouse

Sample Number	Material Number	Material Description	Regulated Limit	Result % by dry weight
<b>Manufactured Materials</b>				
00090.005.B4-M01, M02, M03	HM-01	Timber Joint Mortar	0.5%	None Detected

Refer to appendices for photos, laboratory analytical results, and drawings outlining sample locations.

### 3.2 PAINT COATINGS

During a renovation or demolition project governed by the Occupational Health & Safety Act/Regulations which involves paint finishes containing designated substances **at any concentration**, employers must comply with the Designated Substance Regulation if the work is likely to allow worker exposure. Consideration must be given to the activities being performed and their potential for generation of airborne particulate.

For this reason, surface coatings with results **above analytical detection limits** identified during this assessment are reported as “positive” for the designated substance. Test results for paints suspected of containing arsenic, lead and mercury are listed in Table 5.

Table 5: Analytical Results for Arsenic, Lead and Mercury: Blockhouse #1

Sample Number	Paint Finish Description	Interpretation of Analytical Result		
		Arsenic	Lead	Mercury
00090.005.B1-P01	Grey	<MDL	<b>POSITIVE</b>	<b>POSITIVE</b>
00090.005.B1-P02	White	<MDL	<b>POSITIVE</b>	<b>POSITIVE</b>

Table 6: Analytical Results for Arsenic, Lead and Mercury: Blockhouse #2

Sample Number	Paint Finish Description	Interpretation of Analytical Result		
		Arsenic	Lead	Mercury
00090.005.B2-P01	White	<MDL	<b>POSITIVE</b>	<b>POSITIVE</b>
00090.005.B2-P02	Grey	<MDL	<b>POSITIVE</b>	<MDL

Table 7: Analytical Results for Arsenic, Lead and Mercury: Octagonal Blockhouse

Sample Number	Paint Finish Description	Interpretation of Analytical Result		
		Arsenic	Lead	Mercury
00090.005.B4-P01	Red	<MDL	<b>POSITIVE</b>	<b>POSITIVE</b>

Note: MDL = Method Detection Limit

Refer to appendices for photos, and laboratory analytical results.

## 4.0 CONCLUSIONS

In preparation for renovations, the following designated substances and hazardous materials were identified or suspected:

- Asbestos
  - Blockhouse #1 - Window Glazing (exterior)
  - Blockhouse #3 - Vinyl Floor Tile 12" – White with Black Streak (poor condition)
- Lead
  - Blockhouse #1 – Grey Paint and White Paint
  - Blockhouse #2 – White Paint and Grey Paint
  - Octagonal Blockhouse – Red Paint (man door)
  - Blockhouse #1 - Lead acid batteries are present in emergency lighting systems
  - Blockhouse #2 - Lead acid batteries are present in emergency lighting systems
  - Assumed present in soldered pipe joints where water service is supplied
- Mercury
  - Blockhouse #1 – Grey Paint and White Paint
  - Blockhouse #2 – White Paint
  - Octagon Blockhouse – Red Paint
  - Blockhouse #1 – Mercury containing fluorescent light tubes
  - Blockhouse #3 – Mercury containing fluorescent light tubes
- Silica (assumed present in concrete materials)
- Polychlorinated Biphenyls (PCBs) (suspect)
  - Blockhouse #1 - Lighting ballasts (not confirmed)
  - Blockhouse #2 - Lighting ballasts (not confirmed)

The information presented in this designated substance and hazardous materials survey is based on observations and analytical testing of bulk samples collected. It is possible that building materials not originally observed and subsequently not identified in this report may become exposed during renovation. Any materials not listed in this report and suspect to contain designated substances should be assumed until sampling and analysis is conducted.



## 5.0 RECOMMENDATIONS

Based on assessment findings, OESN provides the following recommendations:

1. Provide this report to all staff and vendors (contractors) prior to any building maintenance or alteration activities.
2. Any materials not listed in this report and suspected to contain designated substances should be assumed positive until testing is conducted.
3. If planned renovations include the disturbance of any designated substances and/or hazardous materials identified, the contractor is required to follow procedures prescribed in applicable legislation.
4. It is recommended that an abatement scope of work for the safe handling and disposal of designated substances and hazardous materials be written prior to renovation or maintenance project commencement.
5. Any activities involving disturbance of asbestos containing window glazing and/or vinyl floor tile be completed using Type 1 asbestos controls in accordance with Ontario Regulation 278/05 Respecting Asbestos on Construction Projects and in Building Repair Operations (as amended).


**Note:** It is recommended the floor tile present within the mechanical room is removed, flooring was in poor condition at the time of evaluation.

6. Prior to the disturbance of paint coatings containing lead, it is recommended the contractor review Ontario's Lead on Construction Project Guideline.
7. Prior to disturbance of paint coatings containing lead and mercury, a procedure should be developed to include for worker protection from lead, control measures and disposal considerations. A sample of the material should be analyzed for Toxicity Leaching Characterization Procedure (TCLP) prior to disposal to determine appropriate waste streaming. OESN recommends the following materials be submitted for TCLP testing.
  - 00090.005.B1-P01 - Grey Paint for Lead TCLP (Blockhouse #1)
  - 00090.005.B1-P02 - White Paint for Lead TCLP (Blockhouse #1)
  - 00090.005.B2-P01 - White Paint for Lead & Mercury TCLP (Blockhouse #2)
  - 00090.005.B4-P01 - Red Paint for Lead TCLP (Octagon Blockhouse)


## Appendix A: Asbestos Material Photo Log

## Blockhouse #1

### Wall Materials

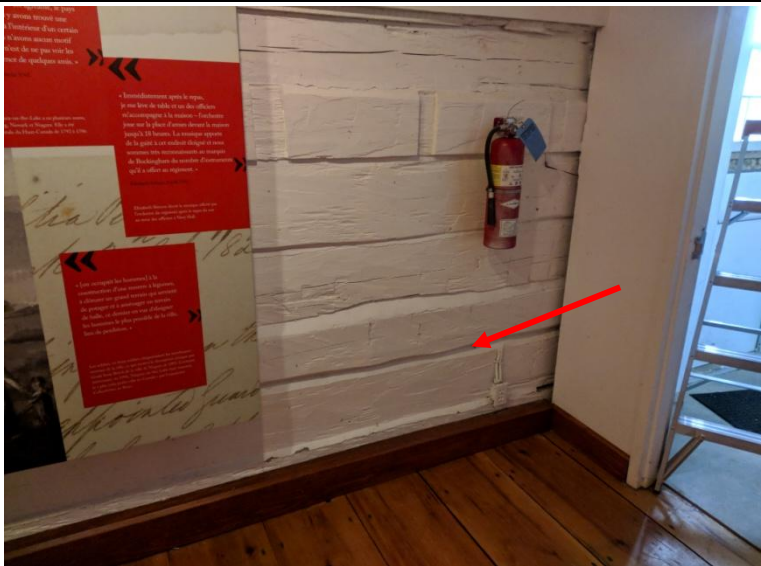
	<b>Sample Identification</b> 00090.005.B1-W01 00090.005.B1-W02 00090.005.B1-W03  <b>Sample Code</b> HW-01
	<b>Sample Location of Material</b> Ground Floor
	<b>Sample Description</b> Gypsum Board with Joint Compound
	<b>Note:</b> Please refer to Appendix E - Sample Location Drawings for additional information.
	<b>Analytical Result:</b> None Detected

### Ceiling Materials


	<b>Sample Identification</b> 00090.005.B1-C01 00090.005.B1-C02 00090.005.B1-C03  <b>Sample Code</b> HC-01
	<b>Sample Location of Material</b> Various
	<b>Sample Description</b> Gypsum Board with Joint Compound
	<b>Note:</b> Please refer to Appendix E - Sample Location Drawings for additional information.
	<b>Analytical Result:</b> None Detected

## Blockhouse #1

### Manufactured Materials

	<p><b>Sample Identification</b> 00090.005.B1-M01 00090.005.B1-M02 00090.005.B1-M03</p> <p><b>Sample Code</b> HM-01</p>
	<p><b>Sample Location of Material</b> Ground Floor</p>
	<p><b>Sample Description</b> Timber Joint Mortar</p>
	<p><b>Note:</b> Please refer to Appendix E - Sample Location Drawings for additional information.</p>
<p><b>Analytical Result :</b> None Detected</p>	

### Manufactured Materials

	<p><b>Sample Identification</b> 00090.005.B1-M04 00090.005.B1-M05 00090.005.B1-M06</p> <p><b>Sample Code</b> HM-02</p>
	<p><b>Sample Location of Material</b> Exterior</p>
	<p><b>Sample Description</b> Window Glazing</p>
	<p><b>Note:</b> Please refer to Appendix E - Sample Location Drawings for additional information.</p>
<p><b>Analytical Result :</b> 2% Chrysotile</p>	

## Blockhouse #2

### Wall Materials

	<b>Sample Identification</b> 00090.005.B2-W01 00090.005.B2-W02 00090.005.B2-W03  <b>Sample Code</b> HW-01
	<b>Sample Location of Material</b> Ground Floor
	<b>Sample Description</b> Gypsum Board with Joint Compound
	<b>Note:</b> Please refer to Appendix E - Sample Location Drawings for additional information.
	<b>Analytical Result:</b>

### Ceiling Materials

<p>Photo of gypsum board ceiling was not taken. Material is typical in appearance.</p>	<b>Sample Identification</b> 00090.005.B2-C01 00090.005.B2-C02 00090.005.B2-C03  <b>Sample Code</b> HC-01
	<b>Sample Location of Material</b> Second Floor
	<b>Sample Description</b> Gypsum Board with Joint Compound
	<b>Note:</b> Please refer to Appendix E - Sample Location Drawings for additional information.
	<b>Analytical Result :</b> None Detected




## Blockhouse #2

### Manufactured Materials

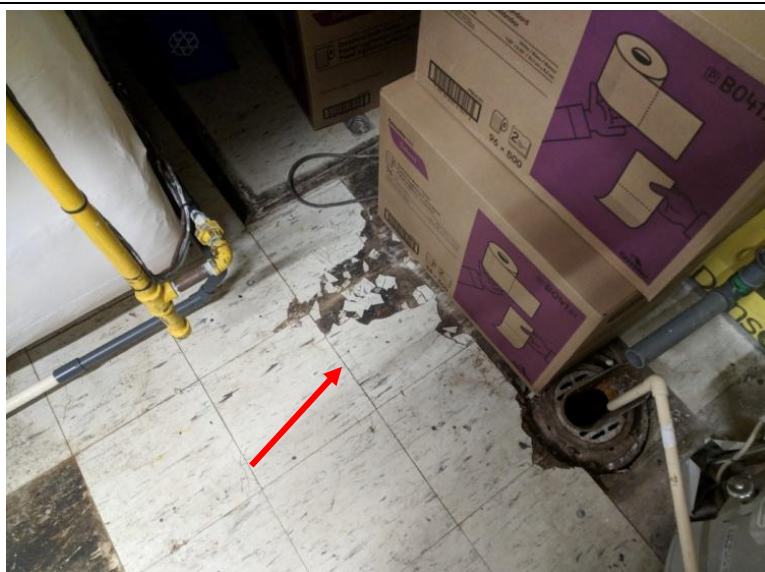
	<b>Sample Identification</b> 00090.005.B2-M01 00090.005.B2-M02 00090.005.B2-M03  <b>Sample Code</b> HM-01
	<b>Sample Location of Material</b> Second Floor
	<b>Sample Description</b> Timber Joint Mortar
	<b>Note:</b> Please refer to Appendix E - Sample Location Drawings for additional information.
	<b>Analytical Result :</b> None Detected

### Manufactured Materials

	<b>Sample Identification</b> 00090.005.B2-M04 00090.005.B2-M05 00090.005.B2-M06  <b>Sample Code</b> HM-02
	<b>Sample Location of Material</b> Ground Floor
	<b>Sample Description</b> Window Caulking
	<b>Note:</b> Please refer to Appendix E - Sample Location Drawings for additional information. <b>(2)</b> Photo shown is from Blockhouse #1. Material similar in composition, <b>window caulking on blockhouse #2 is not asbestos-containing</b>
	<b>Analytical Result :</b> None Detected

## Blockhouse #3

### Floor Materials



#### Sample Identification

00090.005.B3-F01  
00090.005.B3-F02  
00090.005.B3-F03

#### Sample Code

HF-01

#### Sample Location of Material

Ground Floor

#### Sample Description

12" Vinyl Floor Tile – White with  
Black Streak

**Note:** Please refer to Appendix E -  
Sample Location Drawings for  
additional information. **(2)** Mastic  
glue was not present on sample.

**Analytical Result:** 2% Chrysotile

### Ceiling Materials



#### Sample Identification

00090.005.B3-C01  
00090.005.B3-C02  
00090.005.B3-C03

#### Sample Code

HC-01

#### Sample Location of Material

Ground Floor

#### Sample Description


Gypsum Board with Joint  
Compound

**Note:** Please refer to Appendix E -  
Sample Location Drawings for  
additional information.

**Analytical Result :** None Detected

## Octagonal Blockhouse (Blockhouse #4)

### Manufactured Materials

	<b>Sample Identification</b> 00090.005.B4-M01 00090.005.B4-M02 00090.005.B4-M03
	<b>Sample Code</b> HM-01
	<b>Sample Location of Material</b> Interior
	<b>Sample Description</b> Timber Joint Mortar
	<b>Note:</b> Please refer to Appendix E - Sample Location Drawings for additional information.
<b>Analytical Result :</b> None Detected	



## Appendix B: Paint Finishes Photolog

PAINT FINISHES (ARSENIC, LEAD, MERCURY)

Blockhouse #1

	<b>Sample Identification</b> Grey Paint  00090.005.B1-P01
	<b>Arsenic Content</b> <50 µg/g
	<b>Lead Content</b> <b>301 µg/g</b>
	<b>Mercury Content</b> <b>3 µg/g</b>


**Notes: (1)** Paint coating is peeling in several locations.

	<b>Sample Identification</b> White Paint  00090.005.B1-P02
	<b>Arsenic Content</b> <50 µg/g
	<b>Lead Content</b> <b>172 µg/g</b>
	<b>Mercury Content</b> <b>6 µg/g</b>

**Notes: (1)** Paint coating is peeling in several locations.

PAINT FINISHES (ARSENIC, LEAD, MERCURY)

Blockhouse #2


	<b>Sample Identification</b> White Paint  00090.005.B2-P01
	<b>Arsenic Content</b> <50 µg/g
	<b>Lead Content</b> <b>1090 µg/g</b>
	<b>Mercury Content</b> <b>25 µg/g</b>

**Notes: (1)** Picture shown above is Blockhouse #1. Blockhouse #2 grey paint sample collected from Blockhouse #2 exterior. A picture was not collected during the site evaluation.

	<b>Sample Identification</b> Grey Paint  00090.005.B2-P02
	<b>Arsenic Content</b> <50 µg/g
	<b>Lead Content</b> <b>10 µg/g</b>
	<b>Mercury Content</b> <2 µg/g

**PAINT FINISHES (ARSENIC, LEAD, MERCURY)**

**Octagon Blockhouse #4**

	<b>Sample Identification</b> Red Paint  00090.005.B4-P01
	<b>Arsenic Content</b> <50 µg/g
	<b>Lead Content</b> <b>1560 µg/g</b>
	<b>Mercury Content</b> <b>13 µg/g</b>

**Notes: (1)** Paint coating is peeling in several locations.

## Appendix C: Asbestos Analytical Results

## BULK SAMPLING METHODOLOGY

Bulk material samples are randomly collected during the assessment in strategic locations. Samples of materials suspected for containing asbestos minerals are collected by a knowledgeable, competent worker who is trained and experienced in asbestos bulk sampling. Safety measures are applied in accordance with OESN's Standard Operating Procedure (SOP).

Samples are representative of each homogeneous material (uniform in colour and texture) and the quantity of samples are collected in accordance with provincial regulation.

Table 1: Bulk Material Samples of O. Reg. 278/05 (as amended to 479/10).

Item	Type of Material	Size of homogeneous area	Minimum number of bulk material samples to be collected
1.	Surfacing material, including without limitation material that is applied to surfaces by spraying, by troweling or otherwise, such as acoustical plaster on ceilings and fireproofing materials on structural members	Less than 90 square metres	<b>3</b>
		90 or more square metres, but less than 450 square metres	<b>5</b>
		450 or more square metres	<b>7</b>
2.	Thermal insulation, except as described in item 3	Any size	<b>3</b>
3.	Thermal insulation patch	Less than 2 linear metres or 0.5 square metres any size	<b>1</b>
4.	Other material	Any size	<b>3</b>

Samples are tested using test method EPA/600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials. June 1993. O. Reg. 278/05.

Sample locations are plotted on drawings designed to match the Chain of Custody produced on site.

The report of "suspect" materials is based on the field consultant's experience and knowledge regarding the historical use and applications of these chemicals in products. If observations do not confirm the presence of designated substances or hazardous materials, bulk samples of the material are collected and analyzed for the appropriate chemical or biological substance.

## **INTERPRETATION OF RESULTS**

All bulk samples were analyzed using Polarized Light Microscopy (PLM) Method EPA 600/R93/116 and EPA 600/M4-82/020. The limit of quantitation for the test method is <1% asbestos by weight as determined by visual estimation.

Asbestos is present within the sample when the test result indicates a percentage of <1 to 100. A result reported as "<1% asbestos" indicates that trace amounts of asbestos were observed but could not be quantified by the test method. When this occurs, additional analysis can be requested to achieve a lower limit of quantitation.

A result reported as "None Detected" indicates that no traces of asbestos were observed in the sample. For most materials, a "None Detected" result can be interpreted as 0% asbestos. Due to the limitations of EPA 600 test method, non friable organically bound materials such as vinyl floor tiles can be difficult to analyze using PLM. For these materials, EPA recommends that a "None Detected" result be followed with analysis by Transmission Electron Microscopy (TEM) to confirm that asbestos is not present within the material.

The province of Ontario considers any material testing equal or greater than 0.5% by dry weight as asbestos.

June 12, 2018

Ontario Environmental & Safety Network, LTD.  
RR #2 1783 Highway 20C  
Allanburg, ON L0S 1A0

**CLIENT PROJECT:** 00090.005; Fort George - Blockhouse #1  
**CEI LAB CODE:** A18-5785

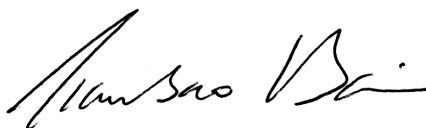
Dear Customer:

Enclosed are asbestos analysis results for PLM Bulk samples received at our laboratory on June 5, 2018. The samples were analyzed for asbestos using polarizing light microscopy (PLM) per the EPA 600 Method.

Sample results containing >1% asbestos are considered asbestos-containing materials (ACMs) per EPA regulatory requirements. The detection limit for the EPA 600 Method is <1% asbestos by weight as determined by visual estimation.

Thank you for your business and we look forward to continuing good relations. If you have any questions, please feel free to call our office at 919-481-1413.

Kind Regards,



Tianbao Bai, Ph.D., CIH  
Laboratory Director



---

## **ASBESTOS ANALYTICAL REPORT**

### **By: Polarized Light Microscopy**

Prepared for

**Ontario Environmental & Safety Network, LTD.**

---

CLIENT PROJECT: 00090.005; Fort George - Blockhouse #1

LAB CODE: A18-5785

TEST METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

REPORT DATE: 06/12/18

TOTAL SAMPLES ANALYZED: 3

# SAMPLES >1% ASBESTOS:

**TEL: 866-481-1412**

***www.ceilabs.com***

# Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

**PROJECT:** 00090.005; Fort George - Blockhouse #1    **LAB CODE:** A18-5785

**METHOD:** EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
00090.005.B1-W01	Layer 1	A23227	White, Tan	Gypsum Board	None Detected
	Layer 2	A23227	White	Joint Compound	None Detected
00090.005.B1-W02	Layer 1	A23228	White, Tan	Gypsum Board	None Detected
	Layer 2	A23228	White	Joint Compound	None Detected
00090.005.B1-W03	Layer 1	A23229	White, Tan	Gypsum Board	None Detected
	Layer 2	A23229	White	Joint Compound	None Detected

# ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

**Client:** Ontario Environmental & Safety Network, LTD.  
RR #2 1783 Highway 20C  
Allanburg, ON L0S 1A0

**Lab Code:** A18-5785  
**Date Received:** 06-05-18  
**Date Analyzed:** 06-12-18  
**Date Reported:** 06-12-18

**Project:** 00090.005; Fort George - Blockhouse #1

## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
<b>00090.005. B1-W01</b> Layer 1 A23227	Gypsum Board	Heterogeneous White, Tan Fibrous Bound	20%	Cellulose	80%	Gypsum	None Detected
	Layer 2 A23227	Joint Compound Heterogeneous White Non-fibrous Bound			60% 35% 5%	Binder Calc Carb Paint	None Detected
<b>00090.005. B1-W02</b> Layer 1 A23228	Gypsum Board	Heterogeneous White, Tan Fibrous Bound	20%	Cellulose	80%	Gypsum	None Detected
	Layer 2 A23228	Joint Compound Heterogeneous White Non-fibrous Bound			60% 35% 5%	Binder Calc Carb Paint	None Detected
<b>00090.005. B1-W03</b> Layer 1 A23229	Gypsum Board	Heterogeneous White, Tan Fibrous Bound	20%	Cellulose	80%	Gypsum	None Detected
	Layer 2 A23229	Joint Compound Heterogeneous White Non-fibrous Bound			60% 35% 5%	Binder Calc Carb Paint	None Detected

---

**LEGEND:**      Non-Anth      = Non-Asbestiform Anthophyllite  
                  Non-Trem      = Non-Asbestiform Tremolite  
                  Calc Carb     = Calcium Carbonate

---

**METHOD:** EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

---

**REPORTING LIMIT:** <1% by visual estimation

---

**REPORTING LIMIT FOR POINT COUNTS:** 0.25% by 400 Points or 0.1% by 1,000 Points

---

**REGULATORY LIMIT:** >1% by weight

---

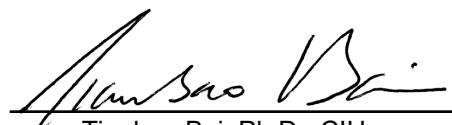
Due to the limitations of the EPA 600 method, nonfriable organically bound materials (NOBs) such as vinyl floor tiles can be difficult to analyze via polarized light microscopy (PLM). EPA recommends that all NOBs analyzed by PLM, and found not to contain asbestos, be further analyzed by Transmission Electron Microscopy (TEM). Please note that PLM analysis of dust and soil samples for asbestos is not covered under NVLAP accreditation. Estimated measurement of uncertainty is available on request.

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ANALYST:

  
Megan Fisher

APPROVED BY:

  
Tianbao Bai, Ph.D., CIH  
Laboratory Director

A18-5785 (3)

A23227-A23229

**Chain of Custody Record**

COC 1 of 1

<b>Laboratory:</b> CEI										
<b>Sample Date:</b> 04-Jun-18		<b>Job Number:</b> 00090.005								
<b>Quotation#:</b>				<b>Analysis</b>						
<b>Job Reference:</b> Fort George - Blockhouse #1				PLM Bulk	PLM Point Count	PLM Gravimetric	TEM Bulk	TEM NIOSH 7402	PCM NIOSH 7400	<b>Results By:</b>
<b>Contact Name:</b> Lisa Tappay										
<b>Contact Email:</b> ltappay@oesn.net										
<b>HM #</b>	<b>Sample #</b>	<b>Sample ID</b>	<b>Location</b>							
HW-01	00090.005.B1-W01	Gypsum Board w/ Joint Compound	Ground Floor	X						<input type="checkbox"/> 4 hour <input type="checkbox"/> 24 hour <input type="checkbox"/> 2 B Days <input type="checkbox"/> 3 B Days <input checked="" type="checkbox"/> 5 B Days <input type="checkbox"/> Other:
HW-01	00090.005.B1-W02	Gypsum Board w/ Joint Compound	Ground Floor	X						
HW-01	00090.005.B1-W03	Gypsum Board w/ Joint Compound	Ground Floor	X						
<b>Comments:</b>			<b>Method of Delivery:</b>	<input type="checkbox"/> Positive stop on analyses identified above with '*'			<b>Total # samples shipped:</b>		3	
<b>Relinquished By (Print &amp; Sign):</b> Kris Douglas		<b>Received by Driver/Depot:</b>		<b>Received at Lab:</b>		<b>Verified By:</b>				
Date/Time: June 4, 2018		Date/Time:		Date/Time: 6/5/18 9:30		Date/Time:				

**Ontario Environmental & Safety Network Ltd.**

1783 Highway 20, RR#2, Allanburg, Ontario Canada L0S 1A0 Tel: 1-888-271-2111 Fax: 905-988-1910 www.oesn.net

June 11, 2018

Ontario Environmental & Safety Network, LTD.  
RR #2 1783 Highway 20C  
Allanburg, ON L0S 1A0

**CLIENT PROJECT:** 00090.005; Fort George - Blockhouse #1  
**CEI LAB CODE:** A18-5787

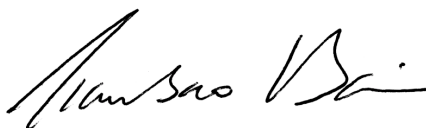
Dear Customer:

Enclosed are asbestos analysis results for PLM Bulk samples received at our laboratory on June 5, 2018. The samples were analyzed for asbestos using polarizing light microscopy (PLM) per the EPA 600 Method.

Sample results containing >1% asbestos are considered asbestos-containing materials (ACMs) per EPA regulatory requirements. The detection limit for the EPA 600 Method is <1% asbestos by weight as determined by visual estimation.

Thank you for your business and we look forward to continuing good relations. If you have any questions, please feel free to call our office at 919-481-1413.

Kind Regards,



Tianbao Bai, Ph.D., CIH  
Laboratory Director

---

## **ASBESTOS ANALYTICAL REPORT**

### **By: Polarized Light Microscopy**

Prepared for

**Ontario Environmental & Safety Network, LTD.**

---

CLIENT PROJECT: 00090.005; Fort George - Blockhouse #1

LAB CODE: A18-5787

TEST METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

REPORT DATE: 06/11/18

TOTAL SAMPLES ANALYZED: 4

# SAMPLES >1% ASBESTOS: 1

**TEL: 866-481-1412**

***www.ceilabs.com***

# Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

**PROJECT:** 00090.005; Fort George - Blockhouse #1    **LAB CODE:** A18-5787

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---

**METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020**

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
00090.005.B1-M01		A23233	White,Gray	Timber Joint Mortar	None Detected
00090.005.B1-M02		A23234	White,Gray	Timber Joint Mortar	None Detected
00090.005.B1-M03		A23235	White,Gray	Timber Joint Mortar	None Detected
00090.005.B1-M04		A23236	Gray,White	Window Glazing	Chrysotile 2%
00090.005.B1-M05		A23237		Sample Not Analyzed per COC	
00090.005.B1-M06		A23238		Sample Not Analyzed per COC	



# ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

**Client:** Ontario Environmental & Safety Network, LTD.  
RR #2 1783 Highway 20C  
Allanburg, ON L0S 1A0

**Lab Code:** A18-5787  
**Date Received:** 06-05-18  
**Date Analyzed:** 06-11-18  
**Date Reported:** 06-11-18

**Project:** 00090.005; Fort George - Blockhouse #1

## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS		ASBESTOS %
			Fibrous	Non-Fibrous	
<b>00090.005.</b> <b>B1-M01</b> A23233	Timber Joint Mortar	Heterogeneous		5% Paint	None Detected
		White, Gray		65% Silicates	
		Non-fibrous		30% Binder	
		Bound			
<b>00090.005.</b> <b>B1-M02</b> A23234	Timber Joint Mortar	Heterogeneous		5% Paint	None Detected
		White, Gray		65% Silicates	
		Non-fibrous		30% Binder	
		Bound			
<b>00090.005.</b> <b>B1-M03</b> A23235	Timber Joint Mortar	Heterogeneous		5% Paint	None Detected
		White, Gray		65% Silicates	
		Non-fibrous		30% Binder	
		Bound			
<b>00090.005.</b> <b>B1-M04</b> A23236	Window Glazing	Heterogeneous		5% Paint	2% Chrysotile
		Gray, White		50% Calc Carb	
		Non-fibrous		43% Binder	
		Bound			
<b>00090.005.</b> <b>B1-M05</b> A23237	Sample Not Analyzed per COC				
<b>00090.005.</b> <b>B1-M06</b> A23238	Sample Not Analyzed per COC				

---

**LEGEND:**      Non-Anth      = Non-Asbestiform Anthophyllite  
                 Non-Trem      = Non-Asbestiform Tremolite  
                 Calc Carb      = Calcium Carbonate

---

**METHOD:** EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

---

**REPORTING LIMIT:** <1% by visual estimation

---

**REPORTING LIMIT FOR POINT COUNTS:** 0.25% by 400 Points or 0.1% by 1,000 Points

---

**REGULATORY LIMIT:** >1% by weight

---

Due to the limitations of the EPA 600 method, nonfriable organically bound materials (NOBs) such as vinyl floor tiles can be difficult to analyze via polarized light microscopy (PLM). EPA recommends that all NOBs analyzed by PLM, and found not to contain asbestos, be further analyzed by Transmission Electron Microscopy (TEM). Please note that PLM analysis of dust and soil samples for asbestos is not covered under NVLAP accreditation. Estimated measurement of uncertainty is available on request.

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**ANALYST:** Samantha Card  
Samantha Card

**APPROVED BY:** Tianbao Bai  
Tianbao Bai, Ph.D., CIH  
Laboratory Director

A18-5787 (U)  
A23233-A23238**Chain of Custody Record**

COC 1 of 1

<b>Laboratory:</b> CEI										
<b>Sample Date:</b> 04-Jun-18		<b>Job Number:</b> 00090.005								
<b>Quotation#:</b>				<b>Analysis</b>						
<b>Job Reference:</b> Fort George - Blockhouse #1				PLM Bulk	PLM Point Count	PLM Gravimetric	TEM Bulk	TEM NIOSH 7402	PCM NIOSH 7400	<b>Results By:</b>
<b>Contact Name:</b> Lisa Tappay										
<b>Contact Email:</b> ltappay@oesn.net										
HM #	Sample #	Sample ID	Location							
HM-01	00090.005.B1-M01	Timber Joint Mortar	Ground Floor	X						<input type="checkbox"/> 4 hour <input type="checkbox"/> 24 hour <input type="checkbox"/> 2 B Days <input type="checkbox"/> 3 B Days <input checked="" type="checkbox"/> 5 B Days <input type="checkbox"/> Other:
HM-01	00090.005.B1-M02	Timber Joint Mortar	Ground Floor	X						
HM-01	00090.005.B1-M03	Timber Joint Mortar	Ground Floor	X						
HM-02	00090.005.B1-M04	Window Glazing	Ground Floor	X						
HM-02	00090.005.B1-M05	Window Glazing	Ground Floor	X						
HM-02	00090.005.B1-M06	Window Glazing	Ground Floor	X						
<b>Comments:</b>			<b>Method of Delivery:</b>	<input checked="" type="checkbox"/> Positive stop on analyses identified above with <sup>1</sup> *1			<b>Total # samples shipped:</b>		6	
<b>Relinquished By (Print &amp; Sign):</b> Kris Douglas <i>K.D.</i>		<b>Received by Driver/Depot:</b>		<b>Received at Lab:</b> <i>CP</i>		<b>Verified By:</b>				
<b>Date/Time:</b> June 4, 2018		<b>Date/Time:</b>		<b>Date/Time:</b> <i>6/5/18 9:30</i>		<b>Date/Time:</b>				

**Ontario Environmental & Safety Network Ltd.**

1783 Highway 20, RR#2, Allanburg, Ontario Canada L0S 1A0 Tel: 1-888-271-2111 Fax: 905-988-1910 www.oesn.net

June 12, 2018

Ontario Environmental & Safety Network, LTD.  
RR #2 1783 Highway 20C  
Allanburg, ON L0S 1A0

**CLIENT PROJECT:** 00090.005; Fort George - Blockhouse #1  
**CEI LAB CODE:** A18-5786

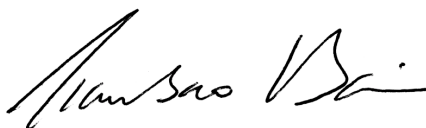
Dear Customer:

Enclosed are asbestos analysis results for PLM Bulk samples received at our laboratory on June 5, 2018. The samples were analyzed for asbestos using polarizing light microscopy (PLM) per the EPA 600 Method.

Sample results containing >1% asbestos are considered asbestos-containing materials (ACMs) per EPA regulatory requirements. The detection limit for the EPA 600 Method is <1% asbestos by weight as determined by visual estimation.

Thank you for your business and we look forward to continuing good relations. If you have any questions, please feel free to call our office at 919-481-1413.

Kind Regards,



Tianbao Bai, Ph.D., CIH  
Laboratory Director

---

## **ASBESTOS ANALYTICAL REPORT**

### **By: Polarized Light Microscopy**

Prepared for

**Ontario Environmental & Safety Network, LTD.**

---

CLIENT PROJECT: 00090.005; Fort George - Blockhouse #1

LAB CODE: A18-5786

TEST METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

REPORT DATE: 06/12/18

TOTAL SAMPLES ANALYZED: 3

# SAMPLES >1% ASBESTOS:

**TEL: 866-481-1412**

***www.ceilabs.com***

# Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

**PROJECT:** 00090.005; Fort George - Blockhouse #1    **LAB CODE:** A18-5786

**METHOD:** EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
00090.005.B1-C01	Layer 1	A23230	White, Tan	Gypsum Board	None Detected
	Layer 2	A23230	White	Joint Compound	None Detected
00090.005.B1-C02	Layer 1	A23231	White, Tan	Gypsum Board	None Detected
	Layer 2	A23231	White	Joint Compound	None Detected
00090.005.B1-C03		A23232	White	Joint Compound	None Detected

# ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

**Client:** Ontario Environmental & Safety Network, LTD.  
RR #2 1783 Highway 20C  
Allanburg, ON L0S 1A0

**Lab Code:** A18-5786  
**Date Received:** 06-05-18  
**Date Analyzed:** 06-12-18  
**Date Reported:** 06-12-18

**Project:** 00090.005; Fort George - Blockhouse #1

## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
00090.005. B1-C01 Layer 1 A23230	Gypsum Board	Heterogeneous White,Tan Fibrous Bound	20%	Cellulose	80%	Gypsum	None Detected
	Layer 2 A23230	Joint Compound Heterogeneous White Non-fibrous Bound			60% 35% 5%	Binder Calc Carb Paint	None Detected
00090.005. B1-C02 Layer 1 A23231	Gypsum Board	Heterogeneous White,Tan Fibrous Bound	20%	Cellulose	80%	Gypsum	None Detected
	Layer 2 A23231	Joint Compound Heterogeneous White Non-fibrous Bound			60% 35% 5%	Binder Calc Carb Paint	None Detected
00090.005. B1-C03 A23232	Joint Compound	Heterogeneous White Non-fibrous Bound			60% 35% 5%	Binder Calc Carb Paint	None Detected

Lab Notes: No gypsum board present

---

---

**LEGEND:**      Non-Anth      = Non-Asbestiform Anthophyllite  
                      Non-Trem      = Non-Asbestiform Tremolite  
                      Calc Carb      = Calcium Carbonate

---

**METHOD:** EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

---

**REPORTING LIMIT:** <1% by visual estimation

---

**REPORTING LIMIT FOR POINT COUNTS:** 0.25% by 400 Points or 0.1% by 1,000 Points

---

**REGULATORY LIMIT:** >1% by weight

---

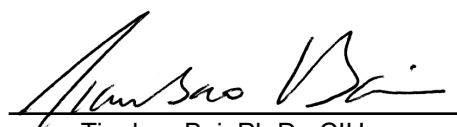
Due to the limitations of the EPA 600 method, nonfriable organically bound materials (NOBs) such as vinyl floor tiles can be difficult to analyze via polarized light microscopy (PLM). EPA recommends that all NOBs analyzed by PLM, and found not to contain asbestos, be further analyzed by Transmission Electron Microscopy (TEM). Please note that PLM analysis of dust and soil samples for asbestos is not covered under NVLAP accreditation. Estimated measurement of uncertainty is available on request.

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ANALYST:

  
 Megan Fisher

APPROVED BY:

  
 Tianbao Bai, Ph.D., CIH  
 Laboratory Director



A18-578U (3)

A23230-A23232

**Chain of Custody Record**

COC 1 of 1

<b>Laboratory:</b> CEI										
<b>Sample Date:</b> 04-Jun-18		<b>Job Number:</b> 00090.005								
<b>Quotation#:</b>				<b>Analysis</b>						
<b>Job Reference:</b> Fort George - Blockhouse #1				PLM Bulk	PLM Point Count	PLM Gravimetric	TEM Bulk	TEM NIOSH 7402	PCM NIOSH 7400	<b>Results By:</b>
<b>Contact Name:</b> Lisa Tappay										
<b>Contact Email:</b> ltappay@oesn.net										
<b>HM #</b>	<b>Sample #</b>	<b>Sample ID</b>	<b>Location</b>							
HC-01	00090.005.B1-C01	Gypsum Board w/ Joint Compound	Ground Floor	X						<input type="checkbox"/> 4 hour <input type="checkbox"/> 24 hour <input type="checkbox"/> 2 B Days <input type="checkbox"/> 3 B Days <input checked="" type="checkbox"/> 5 B Days <input type="checkbox"/> Other:
HC-01	00090.005.B1-C02	Gypsum Board w/ Joint Compound	Ground Floor	X						
HC-01	00090.005.B1-C03	Gypsum Board w/ Joint Compound	Ground Floor	X						
<b>Comments:</b>			<b>Method of Delivery:</b>	<input type="checkbox"/> Positive stop on analyses identified above with '*'				<b>Total # samples shipped:</b>		3
<b>Relinquished By (Print &amp; Sign):</b> Kris Douglas <i>Kris Douglas</i>		<b>Received by Driver/Depot:</b>		<b>Received at Lab:</b> <i>CP</i>			<b>Verified By:</b>			
<b>Date/Time:</b> June 4, 2018		<b>Date/Time:</b>		<b>Date/Time:</b> 6/5/18 9:30			<b>Date/Time:</b>			

**Ontario Environmental & Safety Network Ltd.**

1783 Highway 20, RR#2, Allanburg, Ontario Canada L0S 1A0 Tel: 1-888-271-2111 Fax: 905-988-1910 www.oesn.net

June 12, 2018

Ontario Environmental & Safety Network, LTD.  
RR #2 1783 Highway 20C  
Allanburg, ON L0S 1A0

**CLIENT PROJECT:** 00090.005; Fort George - Blockhouse #2  
**CEI LAB CODE:** A18-5793

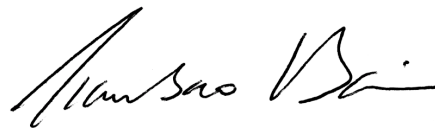
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Thank you for your business and we look forward to continuing good relations. If you have any questions, please feel free to call our office at 919-481-1413.

Kind Regards,



Tianbao Bai, Ph.D., CIH  
Laboratory Director

---

## **ASBESTOS ANALYTICAL REPORT**

### **By: Polarized Light Microscopy**

Prepared for

**Ontario Environmental & Safety Network, LTD.**

---

CLIENT PROJECT: 00090.005; Fort George - Blockhouse #2

LAB CODE: A18-5793

TEST METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

REPORT DATE: 06/12/18

TOTAL SAMPLES ANALYZED: 3

# SAMPLES >1% ASBESTOS:

**TEL: 866-481-1412**

***www.ceilabs.com***

# Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

**PROJECT:** 00090.005; Fort George - Blockhouse #2    **LAB CODE:** A18-5793

**METHOD:** EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
00090.005.B2-W01	Layer 1	A23255	White	Gypsum Board	None Detected
	Layer 2	A23255	White	Joint Compound	None Detected
00090.005.B2-W02	Layer 1	A23256	White	Gypsum Board	None Detected
	Layer 2	A23256	White	Joint Compound	None Detected
00090.005.B2-W03	Layer 1	A23257	White	Gypsum Board	None Detected
	Layer 2	A23257	White	Joint Compound	None Detected

# ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

**Client:** Ontario Environmental & Safety Network, LTD.  
RR #2 1783 Highway 20C  
Allanburg, ON L0S 1A0

**Lab Code:** A18-5793  
**Date Received:** 06-05-18  
**Date Analyzed:** 06-12-18  
**Date Reported:** 06-12-18

**Project:** 00090.005; Fort George - Blockhouse #2

## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
<b>00090.005. B2-W01</b> Layer 1 A23255	Gypsum Board	Heterogeneous White Fibrous Bound	15%	Cellulose	85%	Gypsum	None Detected
	Layer 2 A23255	Joint Compound Homogeneous White Fibrous Bound	2%	Cellulose	98%	Calc Carb	None Detected
<b>00090.005. B2-W02</b> Layer 1 A23256	Gypsum Board	Heterogeneous White Fibrous Bound	15%	Cellulose	85%	Gypsum	None Detected
	Layer 2 A23256	Joint Compound Homogeneous White Fibrous Bound	2%	Cellulose	98%	Calc Carb	None Detected
<b>00090.005. B2-W03</b> Layer 1 A23257	Gypsum Board	Heterogeneous White Fibrous Bound	15%	Cellulose	85%	Gypsum	None Detected
	Layer 2 A23257	Joint Compound Homogeneous White Fibrous Bound	2%	Cellulose	98%	Calc Carb	None Detected

---

**LEGEND:**      Non-Anth      = Non-Asbestiform Anthophyllite  
                  Non-Trem      = Non-Asbestiform Tremolite  
                  Calc Carb     = Calcium Carbonate

---

**METHOD:** EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

---

**REPORTING LIMIT:** <1% by visual estimation

---

**REPORTING LIMIT FOR POINT COUNTS:** 0.25% by 400 Points or 0.1% by 1,000 Points

---

**REGULATORY LIMIT:** >1% by weight

---

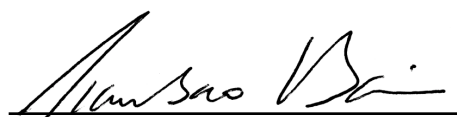
Due to the limitations of the EPA 600 method, nonfriable organically bound materials (NOBs) such as vinyl floor tiles can be difficult to analyze via polarized light microscopy (PLM). EPA recommends that all NOBs analyzed by PLM, and found not to contain asbestos, be further analyzed by Transmission Electron Microscopy (TEM). Please note that PLM analysis of dust and soil samples for asbestos is not covered under NVLAP accreditation. Estimated measurement of uncertainty is available on request.

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**ANALYST:**

  
Shilpa Ladekar

**APPROVED BY:**

  
Tianbao Bai, Ph.D., CIH  
Laboratory Director

A18-5793 (3)  
A23255-A23257**Chain of Custody Record**

COC 1 of 1

<b>Laboratory:</b> CEI										
<b>Sample Date:</b> 04-Jun-18		<b>Job Number:</b> 00090.005								
<b>Quotation#:</b>				<b>Analysis</b>						
<b>Job Reference:</b> Fort George - Blockhouse #2				PLM Bulk	PLM Point Count	PLM Gravimetric	TEM Bulk	TEM NIOSH 7402	PCM NIOSH 7400	<b>Results By:</b>
<b>Contact Name:</b> Lisa Tappay										
<b>Contact Email:</b> ltappay@oesn.net										
<b>HM #</b>	<b>Sample #</b>	<b>Sample ID</b>	<b>Location</b>							
HW-01	00090.005.B2-W01	Gypsum Board w/ Joint Compound	Ground Floor	X						<input type="checkbox"/> 4 hour <input type="checkbox"/> 24 hour <input type="checkbox"/> 2 B Days <input type="checkbox"/> 3 B Days <input checked="" type="checkbox"/> 5 B Days <input type="checkbox"/> Other:
HW-01	00090.005.B2-W02	Gypsum Board w/ Joint Compound	Ground Floor	X						
HW-01	00090.005.B2-W03	Gypsum Board w/ Joint Compound	Ground Floor	X						
<b>Comments:</b>			<b>Method of Delivery:</b>	<input type="checkbox"/> Positive stop on analyses identified above with '*'			<b>Total # samples shipped:</b>		3	
<b>Relinquished By (Print &amp; Sign):</b> Kris Douglas <i>Kris Douglas</i>		<b>Received by Driver/Depot:</b>		<b>Received at Lab:</b> <i>CP</i>			<b>Verified By:</b>			
<b>Date/Time:</b> June 4, 2018		<b>Date/Time:</b>		<b>Date/Time:</b> 6/5/18 9:30			<b>Date/Time:</b>			

**Ontario Environmental & Safety Network Ltd.**

1783 Highway 20, RR#2, Allanburg, Ontario Canada L0S 1A0

Tel: 1-888-271-2111

Fax: 905-988-1910

www.oesn.net

June 11, 2018

Ontario Environmental & Safety Network, LTD.  
RR #2 1783 Highway 20C  
Allanburg, ON L0S 1A0

**CLIENT PROJECT:** 00090.005; Fort George - Blockhouse #2  
**CEI LAB CODE:** A18-5790

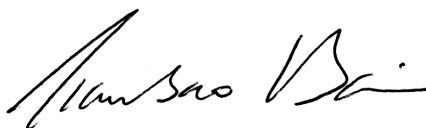
Dear Customer:

Enclosed are asbestos analysis results for PLM Bulk samples received at our laboratory on June 5, 2018. The samples were analyzed for asbestos using polarizing light microscopy (PLM) per the EPA 600 Method.

Sample results containing >1% asbestos are considered asbestos-containing materials (ACMs) per EPA regulatory requirements. The detection limit for the EPA 600 Method is <1% asbestos by weight as determined by visual estimation.

Thank you for your business and we look forward to continuing good relations. If you have any questions, please feel free to call our office at 919-481-1413.

Kind Regards,



Tianbao Bai, Ph.D., CIH  
Laboratory Director



---

## **ASBESTOS ANALYTICAL REPORT**

### **By: Polarized Light Microscopy**

Prepared for

**Ontario Environmental & Safety Network, LTD.**

---

CLIENT PROJECT: 00090.005; Fort George - Blockhouse #2

LAB CODE: A18-5790

TEST METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

REPORT DATE: 06/11/18

TOTAL SAMPLES ANALYZED: 6

# SAMPLES >1% ASBESTOS:

**TEL: 866-481-1412**

*[www.ceilabs.com](http://www.ceilabs.com)*

# Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

**PROJECT:** 00090.005; Fort George - Blockhouse #2    **LAB CODE:** A18-5790

---

---

**METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020**

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
00090.005.B2-M01		A23243	White/Gray	Timber Joint Mortar	None Detected
00090.005.B2-M02		A23244	White/Gray	Timber Joint Mortar	None Detected
00090.005.B2-M03		A23245	White/Gray	Timber Joint Mortar	None Detected
00090.005.B2-M04		A23246	Gray	Window Caulking	None Detected
00090.005.B2-M05		A23247	Gray	Window Caulking	None Detected
00090.005.B2-M06		A23248	Gray	Window Caulking	None Detected

# ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

**Client:** Ontario Environmental & Safety Network, LTD.  
RR #2 1783 Highway 20C  
Allanburg, ON L0S 1A0

**Lab Code:** A18-5790  
**Date Received:** 06-05-18  
**Date Analyzed:** 06-11-18  
**Date Reported:** 06-11-18

**Project:** 00090.005; Fort George - Blockhouse #2

## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
00090.005. B2-M01 A23243	Timber Joint Mortar	Heterogeneous White/Gray Fibrous Bound	<1%	Cellulose	5% 60% 35%	Paint Binder Silicates	None Detected
00090.005. B2-M02 A23244	Timber Joint Mortar	Heterogeneous White/Gray Fibrous Bound	<1%	Cellulose	5% 60% 35%	Paint Binder Silicates	None Detected
00090.005. B2-M03 A23245	Timber Joint Mortar	Heterogeneous White/Gray Fibrous Bound	<1%	Cellulose	5% 60% 35%	Paint Binder Silicates	None Detected
00090.005. B2-M04 A23246	Window Caulking	Homogeneous Gray Fibrous Bound	<1%	Cellulose	100%	Caulk	None Detected
00090.005. B2-M05 A23247	Window Caulking	Homogeneous Gray Fibrous Bound	<1%	Cellulose	100%	Caulk	None Detected
00090.005. B2-M06 A23248	Window Caulking	Homogeneous Gray Fibrous Bound	<1%	Cellulose	100%	Caulk	None Detected

---

---

**LEGEND:**      Non-Anth      = Non-Asbestiform Anthophyllite  
                      Non-Trem      = Non-Asbestiform Tremolite  
                      Calc Carb      = Calcium Carbonate

---

**METHOD:** EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

---

**REPORTING LIMIT:** <1% by visual estimation

---

**REPORTING LIMIT FOR POINT COUNTS:** 0.25% by 400 Points or 0.1% by 1,000 Points

---

**REGULATORY LIMIT:** >1% by weight

---

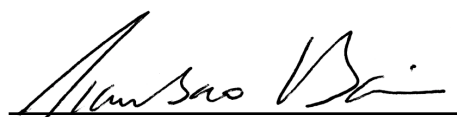
Due to the limitations of the EPA 600 method, nonfriable organically bound materials (NOBs) such as vinyl floor tiles can be difficult to analyze via polarized light microscopy (PLM). EPA recommends that all NOBs analyzed by PLM, and found not to contain asbestos, be further analyzed by Transmission Electron Microscopy (TEM). Please note that PLM analysis of dust and soil samples for asbestos is not covered under NVLAP accreditation. Estimated measurement of uncertainty is available on request.

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**ANALYST:**

  
 Shilpa Ladekar

**APPROVED BY:**

  
 Tianbao Bai, Ph.D., CIH  
 Laboratory Director

A18-5790 (6)  
A23243-A23248**Chain of Custody Record**

COC 1 of 1

<b>Laboratory:</b> CEI										
<b>Sample Date:</b> 04-Jun-18		<b>Job Number:</b> 00090.005								
<b>Quotation#:</b>				<b>Analysis</b>						
<b>Job Reference:</b> Fort George - Blockhouse #2				PLM Bulk	PLM Point Count	PLM Gravimetric	TEM Bulk	TEM NIOSH 7402	PCM NIOSH 7400	<b>Results By:</b>
<b>Contact Name:</b> Lisa Tappay										
<b>Contact Email:</b> ltappay@oesn.net										
<b>HM #</b>	<b>Sample #</b>	<b>Sample ID</b>	<b>Location</b>							
HM-01	00090.005.B2-M01	Timber Joint Mortar	Second Floor	X						<input type="checkbox"/> 4 hour <input type="checkbox"/> 24 hour <input type="checkbox"/> 2 B Days <input type="checkbox"/> 3 B Days <input checked="" type="checkbox"/> 5 B Days <input type="checkbox"/> Other:
HM-01	00090.005.B2-M02	Timber Joint Mortar	Second Floor	X						
HM-01	00090.005.B2-M03	Timber Joint Mortar	Second Floor	X						
HM-02	00090.005.B2-M04	Window Caulking	Attic	X						
HM-02	00090.005.B2-M05	Window Caulking	Attic	X						
HM-02	00090.005.B2-M06	Window Caulking	Attic	X						
<b>Comments:</b>			<b>Method of Delivery:</b>	<input type="checkbox"/> Positive stop on analyses identified above with '*'			<b>Total # samples shipped:</b>		6	
<b>Relinquished By (Print &amp; Sign):</b> Kris Douglas <i>Kris Douglas</i>		<b>Received by Driver/Depot:</b>		<b>Received at Lab:</b> <i>CP</i>			<b>Verified By:</b>			
<b>Date/Time:</b> June 4, 2018		<b>Date/Time:</b>		<b>Date/Time:</b> 6/5/18 9:30			<b>Date/Time:</b>			

**Ontario Environmental & Safety Network Ltd.**

1783 Highway 20, RR#2, Allanburg, Ontario Canada L0S 1A0

Tel: 1-888-271-2111

Fax: 905-988-1910

www.oesn.net

June 11, 2018

Ontario Environmental & Safety Network, LTD.  
RR #2 1783 Highway 20C  
Allanburg, ON L0S 1A0

**CLIENT PROJECT:** 00090.005; Fort George - Blockhouse #2  
**CEI LAB CODE:** A18-5788

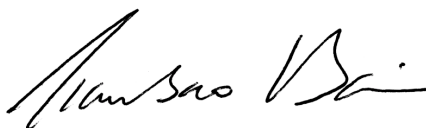
Dear Customer:

Enclosed are asbestos analysis results for PLM Bulk samples received at our laboratory on June 5, 2018. The samples were analyzed for asbestos using polarizing light microscopy (PLM) per the EPA 600 Method.

Sample results containing >1% asbestos are considered asbestos-containing materials (ACMs) per EPA regulatory requirements. The detection limit for the EPA 600 Method is <1% asbestos by weight as determined by visual estimation.

Thank you for your business and we look forward to continuing good relations. If you have any questions, please feel free to call our office at 919-481-1413.

Kind Regards,



Tianbao Bai, Ph.D., CIH  
Laboratory Director

---

## **ASBESTOS ANALYTICAL REPORT**

### **By: Polarized Light Microscopy**

Prepared for

**Ontario Environmental & Safety Network, LTD.**

---

CLIENT PROJECT: 00090.005; Fort George - Blockhouse #2

LAB CODE: A18-5788

TEST METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

REPORT DATE: 06/11/18

TOTAL SAMPLES ANALYZED: 3

# SAMPLES >1% ASBESTOS:

**TEL: 866-481-1412**

***www.ceilabs.com***

# Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

**PROJECT:** 00090.005; Fort George - Blockhouse #2    **LAB CODE:** A18-5788

**METHOD:** EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
00090.005.B2-C01	Layer 1	A23239	White	Joint Compound	None Detected
	Layer 2	A23239	White	Gypsum Board	None Detected
00090.005.B2-C02		A23240	White	Joint Compound	None Detected
00090.005.B2-C03		A23241	White	Gypsum Board	None Detected



# ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

**Client:** Ontario Environmental & Safety Network, LTD.  
RR #2 1783 Highway 20C  
Allanburg, ON L0S 1A0

**Lab Code:** A18-5788  
**Date Received:** 06-05-18  
**Date Analyzed:** 06-11-18  
**Date Reported:** 06-11-18

**Project:** 00090.005; Fort George - Blockhouse #2

## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID	Lab	Lab	NON-ASBESTOS COMPONENTS				ASBESTOS
Lab ID	Description	Attributes	Fibrous		Non-Fibrous		%
00090.005. B2-C01 Layer 1 A23239	Joint Compound	Heterogeneous			5%	Paint	None Detected
		White			70%	Calc Carb	
		Non-fibrous			25%	Binder	
		Bound					
Layer 2 A23239	Gypsum Board	Heterogeneous	15%	Cellulose	85%	Gypsum	None Detected
		White					
		Fibrous					
		Bound					
00090.005. B2-C02 A23240	Joint Compound	Heterogeneous			5%	Paint	None Detected
		White			70%	Calc Carb	
		Non-fibrous			25%	Binder	
		Bound					
Lab Notes: No gypsum board present							
00090.005. B2-C03 A23241	Gypsum Board	Heterogeneous	15%	Cellulose	80%	Gypsum	None Detected
		White			5%	Paint	
		Fibrous					
		Bound					
Lab Notes: No joint compound present							

---

**LEGEND:**      Non-Anth      = Non-Asbestiform Anthophyllite  
                  Non-Trem      = Non-Asbestiform Tremolite  
                  Calc Carb      = Calcium Carbonate

---

**METHOD:** EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

---

**REPORTING LIMIT:** <1% by visual estimation

---

**REPORTING LIMIT FOR POINT COUNTS:** 0.25% by 400 Points or 0.1% by 1,000 Points

---

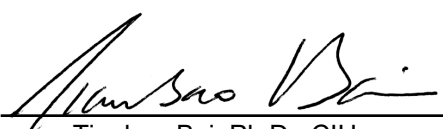
**REGULATORY LIMIT:** >1% by weight

---

Due to the limitations of the EPA 600 method, nonfriable organically bound materials (NOBs) such as vinyl floor tiles can be difficult to analyze via polarized light microscopy (PLM). EPA recommends that all NOBs analyzed by PLM, and found not to contain asbestos, be further analyzed by Transmission Electron Microscopy (TEM). Please note that PLM analysis of dust and soil samples for asbestos is not covered under NVLAP accreditation. Estimated measurement of uncertainty is available on request.

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**ANALYST:**   
Samantha Card

**APPROVED BY:**   
Tianbao Bai, Ph.D., CIH  
Laboratory Director

A18-5788 (3)  
A23239-A23241

## Chain of Custody Record

COC 1 of 1

<b>Laboratory:</b> CEI											
<b>Sample Date:</b> 04-Jun-18		<b>Job Number:</b> 00090.005									
<b>Quotation#:</b>				<b>Analysis</b>							
<b>Job Reference:</b> Fort George - Blockhouse #2				PLM Bulk	PLM Point Count	PLM Gravimetric	TEM Bulk	TEM NIOSH 7402	PCM NIOSH 7400	<b>Results By:</b>	
<b>Contact Name:</b> Lisa Tappay											
<b>Contact Email:</b> ltappay@oesn.net											
HM #	Sample #	Sample ID	Location								
HC-01	00090.005.B2-C01	Gypsum Board w/ Joint Compound	Second Floor	X						<input type="checkbox"/> 4 hour <input type="checkbox"/> 24 hour <input type="checkbox"/> 2 B Days <input type="checkbox"/> 3 B Days <input checked="" type="checkbox"/> 5 B Days <input type="checkbox"/> Other:	
HC-01	00090.005.B2-C02	Gypsum Board w/ Joint Compound	Second Floor	X							
HC-01	00090.005.B2-C03	Gypsum Board w/ Joint Compound	Second Floor	X							
<b>Comments:</b>			<b>Method of Delivery:</b>	<input type="checkbox"/> Positive stop on analyses identified above with <sup>1</sup> *1			<b>Total # samples shipped:</b>		3		
<b>Relinquished By (Print &amp; Sign):</b> Kris Douglas <i>Kris Douglas</i>		<b>Received by Driver/Depot:</b>		<b>Received at Lab:</b> <i>CP</i>			<b>Verified By:</b>				
<b>Date/Time:</b> June 4, 2018		<b>Date/Time:</b>		<b>Date/Time:</b> 6/5/18 9:30			<b>Date/Time:</b>				



## Ontario Environmental &amp; Safety Network Ltd.

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Tel: 1-888-271-2111

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www.oesn.net

June 11, 2018

Ontario Environmental & Safety Network, LTD.  
RR #2 1783 Highway 20C  
Allanburg, ON L0S 1A0

**CLIENT PROJECT:** 00090.005; Fort George - Blockhouse #3  
**CEI LAB CODE:** A18-5792

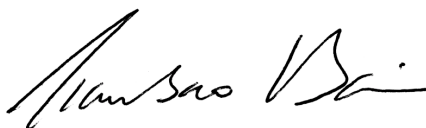
Dear Customer:

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Thank you for your business and we look forward to continuing good relations. If you have any questions, please feel free to call our office at 919-481-1413.

Kind Regards,



Tianbao Bai, Ph.D., CIH  
Laboratory Director

---

## **ASBESTOS ANALYTICAL REPORT**

### **By: Polarized Light Microscopy**

Prepared for

**Ontario Environmental & Safety Network, LTD.**

---

CLIENT PROJECT: 00090.005; Fort George - Blockhouse #3

LAB CODE: A18-5792

TEST METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

REPORT DATE: 06/11/18

TOTAL SAMPLES ANALYZED: 3

# SAMPLES >1% ASBESTOS:

**TEL: 866-481-1412**

***www.ceilabs.com***

# Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

**PROJECT:** 00090.005; Fort George - Blockhouse #3    **LAB CODE:** A18-5792

**METHOD:** EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
00090.005.B3-C01	Layer 1	A23252	White	Joint Compound	None Detected
	Layer 2	A23252	White	Gypsum Board	None Detected
00090.005.B3-C02	Layer 1	A23253	White	Joint Compound	None Detected
	Layer 2	A23253	White	Gypsum Board	None Detected
00090.005.B3-C03	Layer 1	A23254	White	Joint Compound	None Detected
	Layer 2	A23254	White	Gypsum Board	None Detected

# ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

**Client:** Ontario Environmental & Safety Network, LTD.  
RR #2 1783 Highway 20C  
Allanburg, ON L0S 1A0

**Lab Code:** A18-5792  
**Date Received:** 06-05-18  
**Date Analyzed:** 06-11-18  
**Date Reported:** 06-11-18

**Project:** 00090.005; Fort George - Blockhouse #3

## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
<b>00090.005. B3-C01</b> Layer 1 A23252	Joint Compound	Heterogeneous			5%	Paint	None Detected
		White			70%	Calc Carb	
		Non-fibrous			25%	Binder	
		Bound					
Layer 2 A23252	Gypsum Board	Heterogeneous	15%	Cellulose	85%	Gypsum	None Detected
		White					
		Fibrous					
		Bound					
<b>00090.005. B3-C02</b> Layer 1 A23253	Joint Compound	Heterogeneous			5%	Paint	None Detected
		White			70%	Calc Carb	
		Non-fibrous			25%	Binder	
		Bound					
Layer 2 A23253	Gypsum Board	Heterogeneous	15%	Cellulose	85%	Gypsum	None Detected
		White					
		Fibrous					
		Bound					
<b>00090.005. B3-C03</b> Layer 1 A23254	Joint Compound	Heterogeneous			5%	Paint	None Detected
		White			70%	Calc Carb	
		Non-fibrous			25%	Binder	
		Bound					
Layer 2 A23254	Gypsum Board	Heterogeneous	15%	Cellulose	85%	Gypsum	None Detected
		White					
		Fibrous					
		Bound					

---

**LEGEND:**      Non-Anth      = Non-Asbestiform Anthophyllite  
                  Non-Trem      = Non-Asbestiform Tremolite  
                  Calc Carb      = Calcium Carbonate

---

**METHOD:** EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

---

**REPORTING LIMIT:** <1% by visual estimation

---

**REPORTING LIMIT FOR POINT COUNTS:** 0.25% by 400 Points or 0.1% by 1,000 Points

---

**REGULATORY LIMIT:** >1% by weight

---

Due to the limitations of the EPA 600 method, nonfriable organically bound materials (NOBs) such as vinyl floor tiles can be difficult to analyze via polarized light microscopy (PLM). EPA recommends that all NOBs analyzed by PLM, and found not to contain asbestos, be further analyzed by Transmission Electron Microscopy (TEM). Please note that PLM analysis of dust and soil samples for asbestos is not covered under NVLAP accreditation. Estimated measurement of uncertainty is available on request.

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**ANALYST:** Samantha Card  
Samantha Card

**APPROVED BY:** Tianbao Bai  
Tianbao Bai, Ph.D., CIH  
Laboratory Director



A18-5792 (3)  
A23252-A23254  
**Chain of Custody Record**

COC 1 of 1

<b>Laboratory:</b> CEI										
<b>Sample Date:</b> 04-Jun-18		<b>Job Number:</b> 00090.005								
<b>Quotation#:</b>				<b>Analysis</b>						
<b>Job Reference:</b> Fort George - Blockhouse #3				PLM Bulk	PLM Point Count	PLM Gravimetric	TEM Bulk	TEM NIOSH 7402	PCM NIOSH 7400	<b>Results By:</b>
<b>Contact Name:</b> Lisa Tappay										
<b>Contact Email:</b> ltappay@oesn.net										
<b>HM #</b>	<b>Sample #</b>	<b>Sample ID</b>	<b>Location</b>							
HC-01	00090.005.B3-C01	Gypsum Board w/ Joint Compound	Ground Floor	X						<input type="checkbox"/> 4 hour <input type="checkbox"/> 24 hour <input type="checkbox"/> 2 B Days <input type="checkbox"/> 3 B Days <input checked="" type="checkbox"/> 5 B Days <input type="checkbox"/> Other:
HC-01	00090.005.B3-C02	Gypsum Board w/ Joint Compound	Ground Floor	X						
HC-01	00090.005.B3-C03	Gypsum Board w/ Joint Compound	Ground Floor	X						
<b>Comments:</b>			<b>Method of Delivery:</b>	<input type="checkbox"/> Positive stop on analyses identified above with '*'			<b>Total # samples shipped:</b>		3	
<b>Relinquished By (Print &amp; Sign):</b> Kris Douglas <i>Kris Douglas</i>		<b>Received by Driver/Depot:</b>		<b>Received at Lab:</b> <i>CP</i>			<b>Verified By:</b>			
<b>Date/Time:</b> June 4, 2018		<b>Date/Time:</b>		<b>Date/Time:</b> 6/5/18 9:50			<b>Date/Time:</b>			



### Ontario Environmental & Safety Network Ltd.

1783 Highway 20, RR#2, Allanburg, Ontario Canada L0S 1A0 Tel: 1-888-271-2111 Fax: 905-988-1910 www.oesn.net

June 11, 2018

Ontario Environmental & Safety Network, LTD.  
RR #2 1783 Highway 20C  
Allanburg, ON L0S 1A0

**CLIENT PROJECT:** 00090.005; Fort George - Blockhouse #3  
**CEI LAB CODE:** A18-5791

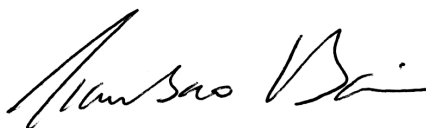
Dear Customer:

Enclosed are asbestos analysis results for PLM Bulk samples received at our laboratory on June 5, 2018. The samples were analyzed for asbestos using polarizing light microscopy (PLM) per the EPA 600 Method.

Sample results containing >1% asbestos are considered asbestos-containing materials (ACMs) per EPA regulatory requirements. The detection limit for the EPA 600 Method is <1% asbestos by weight as determined by visual estimation.

Thank you for your business and we look forward to continuing good relations. If you have any questions, please feel free to call our office at 919-481-1413.

Kind Regards,



Tianbao Bai, Ph.D., CIH  
Laboratory Director

---

## **ASBESTOS ANALYTICAL REPORT**

### **By: Polarized Light Microscopy**

Prepared for

**Ontario Environmental & Safety Network, LTD.**

---

CLIENT PROJECT: 00090.005; Fort George - Blockhouse #3

LAB CODE: A18-5791

TEST METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

REPORT DATE: 06/11/18

TOTAL SAMPLES ANALYZED: 1

# SAMPLES >1% ASBESTOS: 1

**TEL: 866-481-1412**

***www.ceilabs.com***

# Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

**PROJECT:** 00090.005; Fort George - Blockhouse #3    **LAB CODE:** A18-5791

---

---

**METHOD:** EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
00090.005.B3-F01		A23249	White	Floor Tile	Chrysotile 2%
00090.005.B3-F02		A23250		Sample Not Analyzed per COC	
00090.005.B3-F03		A23251		Sample Not Analyzed per COC	

# ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

**Client:** Ontario Environmental & Safety Network, LTD.  
RR #2 1783 Highway 20C  
Allanburg, ON L0S 1A0

**Lab Code:** A18-5791  
**Date Received:** 06-05-18  
**Date Analyzed:** 06-11-18  
**Date Reported:** 06-11-18

**Project:** 00090.005; Fort George - Blockhouse #3

## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS		ASBESTOS %
			Fibrous	Non-Fibrous	
<b>00090.005.</b> <b>B3-F01</b> A23249	Floor Tile	Homogeneous White Non-fibrous Bound		98% Vinyl	<b>2% Chrysotile</b>
Lab Notes: No mastic present.					
<b>00090.005.</b> <b>B3-F02</b> A23250	Sample Not Analyzed per COC				
<b>00090.005.</b> <b>B3-F03</b> A23251	Sample Not Analyzed per COC				

---

---

**LEGEND:**      Non-Anth      = Non-Asbestiform Anthophyllite  
                      Non-Trem      = Non-Asbestiform Tremolite  
                      Calc Carb      = Calcium Carbonate

---

**METHOD:** EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

---

**REPORTING LIMIT:** <1% by visual estimation

---

**REPORTING LIMIT FOR POINT COUNTS:** 0.25% by 400 Points or 0.1% by 1,000 Points

---

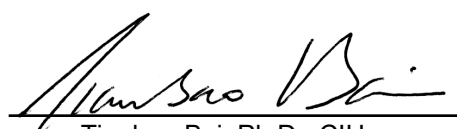
**REGULATORY LIMIT:** >1% by weight

---

Due to the limitations of the EPA 600 method, nonfriable organically bound materials (NOBs) such as vinyl floor tiles can be difficult to analyze via polarized light microscopy (PLM). EPA recommends that all NOBs analyzed by PLM, and found not to contain asbestos, be further analyzed by Transmission Electron Microscopy (TEM). Please note that PLM analysis of dust and soil samples for asbestos is not covered under NVLAP accreditation. Estimated measurement of uncertainty is available on request.

This report relates only to the samples tested or analyzed and may not be reproduced, except in full, without written approval by Eurofins CEI. Eurofins CEI makes no warranty representation regarding the accuracy of client submitted information in preparing and presenting analytical results. Interpretation of the analytical results is the sole responsibility of the client. Samples were received in acceptable condition unless otherwise noted. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.

**ANALYST:**   
                      Mikaela Batta

**APPROVED BY:**   
                                  Tianbao Bai, Ph.D., CIH  
                                  Laboratory Director

AL8-5791 (3)  
A23249-A23251**Chain of Custody Record**

COC 1 of 1

<b>Laboratory:</b> CEI										
<b>Sample Date:</b> 04-Jun-18		<b>Job Number:</b> 00090.005								
<b>Quotation#:</b>				<b>Analysis</b>						
<b>Job Reference:</b> Fort George - Blockhouse #3				PLM Bulk	PLM Point Count	PLM Gravimetric	TEM Bulk	TEM NIOSH 7402	PCM NIOSH 7400	<b>Results By:</b>
<b>Contact Name:</b> Lisa Tappay										
<b>Contact Email:</b> ltappay@oesn.net										
<b>HM #</b>	<b>Sample #</b>	<b>Sample ID</b>	<b>Location</b>							
HF-01	00090.005.B3-F01	Vinyl Floor Tile 12" - White with Black Streak	Ground Floor	X						<input type="checkbox"/> 4 hour <input type="checkbox"/> 24 hour <input type="checkbox"/> 2 B Days <input type="checkbox"/> 3 B Days <input checked="" type="checkbox"/> 5 B Days <input type="checkbox"/> Other:
HF-01	00090.005.B3-F02	Vinyl Floor Tile 12" - White with Black Streak	Ground Floor	X						
HF-01	00090.005.B3-F03	Vinyl Floor Tile 12" - White with Black Streak	Ground Floor	X						
<b>Comments:</b>			<b>Method of Delivery:</b>	<input checked="" type="checkbox"/> Positive stop on analyses identified above with <sup>1</sup> *1			<b>Total # samples shipped:</b>		3	
<b>Relinquished By (Print &amp; Sign):</b> Kris Douglas <i>Kris Douglas</i>		<b>Received by Driver/Depot:</b>		<b>Received at Lab:</b> <i>CE</i>			<b>Verified By:</b>			
<b>Date/Time:</b> June 4, 2018		<b>Date/Time:</b>		<b>Date/Time:</b> 6/5/18 9:30			<b>Date/Time:</b>			

**Ontario Environmental & Safety Network Ltd.**

1783 Highway 20, RR#2, Allanburg, Ontario Canada L0S 1A0 Tel: 1-888-271-2111 Fax: 905-988-1910 www.oesn.net

June 11, 2018

Ontario Environmental & Safety Network, LTD.  
RR #2 1783 Highway 20C  
Allanburg, ON L0S 1A0

**CLIENT PROJECT:** 00090.005; Fort George - Blockhouse #4  
**CEI LAB CODE:** A18-5784

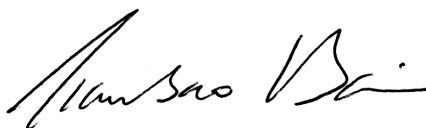
Dear Customer:

Enclosed are asbestos analysis results for PLM Bulk samples received at our laboratory on June 5, 2018. The samples were analyzed for asbestos using polarizing light microscopy (PLM) per the EPA 600 Method.

Sample results containing >1% asbestos are considered asbestos-containing materials (ACMs) per EPA regulatory requirements. The detection limit for the EPA 600 Method is <1% asbestos by weight as determined by visual estimation.

Thank you for your business and we look forward to continuing good relations. If you have any questions, please feel free to call our office at 919-481-1413.

Kind Regards,



Tianbao Bai, Ph.D., CIH  
Laboratory Director



---

## **ASBESTOS ANALYTICAL REPORT**

### **By: Polarized Light Microscopy**

Prepared for

**Ontario Environmental & Safety Network, LTD.**

---

CLIENT PROJECT: 00090.005; Fort George - Blockhouse #4

LAB CODE: A18-5784

TEST METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

REPORT DATE: 06/11/18

TOTAL SAMPLES ANALYZED: 3

# SAMPLES >1% ASBESTOS:

**TEL: 866-481-1412**

***www.ceilabs.com***

# Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

**PROJECT:** 00090.005; Fort George - Blockhouse #4    **LAB CODE:** A18-5784

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---

**METHOD:** EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
00090.005.B4-M01		A23224	Gray	Timer Joint Mortar	None Detected
00090.005.B4-M02		A23225	Gray	Timer Joint Mortar	None Detected
00090.005.B4-M03		A23226	Gray	Timer Joint Mortar	None Detected

# ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

**Client:** Ontario Environmental & Safety Network, LTD.  
RR #2 1783 Highway 20C  
Allanburg, ON L0S 1A0

**Lab Code:** A18-5784

**Date Received:** 06-05-18

**Date Analyzed:** 06-11-18

**Date Reported:** 06-11-18

**Project:** 00090.005; Fort George - Blockhouse #4

## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
00090.005. B4-M01 A23224	Timer Joint Mortar	Heterogeneous	<1%	Cellulose	65%	Silicates	None Detected
		Gray			35%	Binder	
		Non-fibrous					
		Bound					
00090.005. B4-M02 A23225	Timer Joint Mortar	Heterogeneous	<1%	Cellulose	65%	Silicates	None Detected
		Gray			35%	Binder	
		Non-fibrous					
		Bound					
00090.005. B4-M03 A23226	Timer Joint Mortar	Heterogeneous	<1%	Cellulose	65%	Silicates	None Detected
		Gray			35%	Binder	
		Non-fibrous					
		Bound					

---

**LEGEND:**      Non-Anth      = Non-Asbestiform Anthophyllite  
                 Non-Trem      = Non-Asbestiform Tremolite  
                 Calc Carb      = Calcium Carbonate

---

**METHOD:** EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

---

**REPORTING LIMIT:** <1% by visual estimation

---

**REPORTING LIMIT FOR POINT COUNTS:** 0.25% by 400 Points or 0.1% by 1,000 Points

---

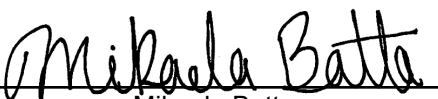
**REGULATORY LIMIT:** >1% by weight

---

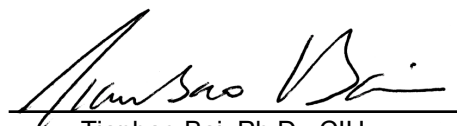
Due to the limitations of the EPA 600 method, nonfriable organically bound materials (NOBs) such as vinyl floor tiles can be difficult to analyze via polarized light microscopy (PLM). EPA recommends that all NOBs analyzed by PLM, and found not to contain asbestos, be further analyzed by Transmission Electron Microscopy (TEM). Please note that PLM analysis of dust and soil samples for asbestos is not covered under NVLAP accreditation. Estimated measurement of uncertainty is available on request.

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ANALYST:

  
Mikaela Batta

APPROVED BY:

  
Tianbao Bai, Ph.D., CIH  
Laboratory Director

A18- 5784 (3)

A2322A- A2322B

**Chain of Custody Record**

COC 1 of 1

<b>Laboratory:</b> CEI											
<b>Sample Date:</b> 04-Jun-18		<b>Job Number:</b> 00090.005									
<b>Quotation#:</b>				<b>Analysis</b>							
<b>Job Reference:</b> Fort George - Blockhouse #4				PLM Bulk	PLM Point Count	PLM Gravimetric	TEM Bulk	TEM NIOSH 7402	PCM NIOSH 7400	<b>Results By:</b>	
<b>Contact Name:</b> Lisa Tappay											
<b>Contact Email:</b> ltappay@oesn.net											
<b>HM #</b>	<b>Sample #</b>	<b>Sample ID</b>	<b>Location</b>								
HM-01	00090.005.B4-M01	Timer Joint Mortar	Interior	X						<input type="checkbox"/> 4 hour <input type="checkbox"/> 24 hour <input type="checkbox"/> 2 B Days <input type="checkbox"/> 3 B Days <input checked="" type="checkbox"/> 5 B Days <input type="checkbox"/> Other:	
HM-01	00090.005.B4-M02	Timer Joint Mortar	Interior	X							
HM-01	00090.005.B4-M03	Timer Joint Mortar	Interior	X							
<b>Comments:</b>			<b>Method of Delivery:</b>	<input checked="" type="checkbox"/> Positive stop on analyses identified above with '*'				<b>Total # samples shipped:</b>		3	
<b>Relinquished By (Print &amp; Sign):</b> Kris Douglas <i>Kris Douglas</i>		<b>Received by Driver/Depot:</b>		<b>Received at Lab:</b> <i>CP</i>		<b>Verified By:</b>					
<b>Date/Time:</b> June 4, 2018		<b>Date/Time:</b>		<b>Date/Time:</b> 6/5/18 9:30		<b>Date/Time:</b>					

**Ontario Environmental & Safety Network Ltd.**

1783 Highway 20, RR#2, Allanburg, Ontario Canada L0S 1A0

Tel: 1-888-271-2111

Fax: 905-988-1910

www.oesn.net

## Appendix D: Paint Finishes Analytical Results

## **SAMPLING METHODOLOGY PAINT COATINGS (Lead, Mercury, Arsenic)**

Paints observed during the time of inspection were bulk sampled and sent to an accredited laboratory for analysis.

Each sample container is labeled with a sticker detailing the information (e.g. sample number, name, color description, room location) specific for that sample.

All samples are recorded on a Chain of Custody and sent to an accredited laboratory for analysis of Arsenic, Lead and Mercury.

For the determination of metals (arsenic, lead) in paint coatings U.S. Environmental Protection Agency test method EPA 6020 – Digestion, ICP-MS was applied.

For the determination of mercury in paint coatings U.S. Environmental Protection Agency test method EPA 7471B – CVAA, digestion was applied.

Sample locations are plotted on the drawings designed to match the Chain of Custody produced on site.

## INTERPRETATION OF RESULTS

Regulated provincial limits for defining whether a surface coating is lead, arsenic or mercury “containing” do not currently exist; industry best practice dictates that consideration needs to be given to surface coatings containing any level of these contaminants for worker health and safety. The Ontario Ministry of Labour does not consider whether a surface coating is “lead-based” or “lead-containing” within the Occupational Health & Safety Act & Regulations; instead the focus is on whether workers may be exposed to lead or another designated substance, whatever the source.<sup>1</sup>

### United States Legislation References

Within the United States, the Housing and Urban Development and the Consumer Products Safety Commission (CPSC) have designated levels of lead in paint below which they consider the paint to be non-lead containing.<sup>2</sup> These include:

	Definition
Lead-based	≥ 5000 ppm by weight
Lead-containing	> 90 ppm by weight

The U.S. OSHA has stated that they do not recognize these levels as safe under most workplace situations; and that for the purposes of occupational health, these levels may easily present an exposure hazard.<sup>3</sup>

### Canadian Legislation References

The Federal Surface Coating Materials Regulations<sup>4</sup> prescribes maximum concentrations for total lead and total mercury present in consumer paints and other surface coatings, applicable to the advertising, sale and importation of these materials as well as furniture and other articles for children; and is intended to protect consumers. These limits are:

	Limit <sup>5</sup>
Lead	90 mg/kg
Mercury	10 mg/kg

<sup>1</sup> Ontario Regulation 490/09 Designated Substances under Occupational Health and Safety Act, R.S.O. 1990, c. O.1 (as amended).

<sup>2</sup> U.S. Department of Housing & Urban Development. Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing. Office of Healthy Homes and Lead Hazard Control, 2<sup>nd</sup> ed. July 2012.

<sup>3</sup> Occupational Safety and Health Administration. Standard Interpretations, Standard number 1926.62. [https://www.osha.gov/pls/oshaweb/owasrch.search\\_form?p\\_doc\\_type=INTERPRETATIONS&p\\_toc\\_level=3&p\\_key\\_value=1926.62&p\\_status=CURRENT](https://www.osha.gov/pls/oshaweb/owasrch.search_form?p_doc_type=INTERPRETATIONS&p_toc_level=3&p_key_value=1926.62&p_status=CURRENT)

<sup>4</sup> Surface Coating Materials Regulations SOR/2005-109 (June 2011) under Canada Consumer Product Safety Act and pursuant to Section 5 of the Hazardous Products Act (R.S., c.24 (3<sup>rd</sup> Suppl), s.1).

<sup>5</sup> mg/kg = µg/g = ppm



In the absence of Ontario Ministry of Labour regulatory direction on the definition of a “lead-containing” or “mercury-containing” material, the Federal Surface Coating Materials Regulations limits have been routinely used in Canada as practical values which, when exceeded, worker exposure precautions were recommended. However, in the interest of protecting worker health and safety, industrial hygiene best practice dictates that any coating identified with lead, arsenic or mercury above analytical detection limits should be considered lead-, arsenic- or mercury-containing.

## Certificate of Analysis

### Ontario Environmental & Safety Network Ltd. (St.)

184 Scott Street, Unit 8 & 9  
St. Catharines, ON L2N 1H1  
Attn: Lisa Tappay

Client PO: Fort George, Blockhouse #1  
Project: 00090.005  
Custody:

Report Date: 7-Jun-2018  
Order Date: 4-Jun-2018

**Order #: 1823227**

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1823227-01	00090.005.B1-P01, Grey Paint
1823227-02	00090.005.B1-P02, White Paint

Approved By:



Dale Robertson, BSc  
Laboratory Director

Certificate of Analysis

Report Date: 07-Jun-2018

Client: Ontario Environmental &amp; Safety Network Ltd. (St.)

Order Date: 4-Jun-2018

Client PO: Fort George, Blockhouse #1

Project Description: 00090.005

**Analysis Summary Table**

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Mercury by CVAA	EPA 7471B - CVAA, digestion	6-Jun-18	6-Jun-18
Metals, ICP-MS	EPA 6020 - Digestion - ICP-MS	7-Jun-18	7-Jun-18

Certificate of Analysis

Client: Ontario Environmental & Safety Network Ltd. (St.)

Client PO: Fort George, Blockhouse #1

Report Date: 07-Jun-2018

Order Date: 4-Jun-2018

Project Description: 00090.005

Client ID:	00090.005.B1-P01, Grey Paint	00090.005.B1-P02, White Paint	-	-
Sample Date:	06/04/2018 00:00	06/04/2018 00:00	-	-
Sample ID:	1823227-01	1823227-02	-	-
MDL/Units	Paint	Paint	-	-

**Metals**

Arsenic	50 ug/g	<50	<50	-	-
Lead	5 ug/g	301	172	-	-
Mercury	2 ug/g	3	6	-	-

Certificate of Analysis

Report Date: 07-Jun-2018

Client: Ontario Environmental &amp; Safety Network Ltd. (St.)

Order Date: 4-Jun-2018

Client PO: Fort George, Blockhouse #1

Project Description: 00090.005

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	---------------	------	------------	-----	-----------	-------

**Metals**

Arsenic	ND	50	ug/g						
Lead	ND	5	ug/g						
Mercury	ND	2	ug/g						

Certificate of Analysis

Report Date: 07-Jun-2018

Client: Ontario Environmental & Safety Network Ltd. (St.)

Order Date: 4-Jun-2018

Client PO: Fort George, Blockhouse #1

Project Description: 00090.005

### Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Metals</b>									
Arsenic	ND	50	ug/g	ND			0.0	50	
Lead	829	5	ug/g	834			0.6	50	
Mercury	18	2	ug/g	11			47.1	30	QR-04

Certificate of Analysis

Report Date: 07-Jun-2018

Client: Ontario Environmental & Safety Network Ltd. (St.)

Order Date: 4-Jun-2018

Client PO: Fort George, Blockhouse #1

Project Description: 00090.005

### Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Metals</b>									
Arsenic	53.2		ug/L	ND	106	70-130			
Lead	86.9		ug/L	33.4	107	70-130			
Mercury	31	2	ug/g	11	129	70-130			

Certificate of Analysis

Client: Ontario Environmental & Safety Network Ltd. (St.)

Client PO: Fort George, Blockhouse #1

Report Date: 07-Jun-2018

Order Date: 4-Jun-2018

Project Description: 00090.005

**Qualifier Notes:**

***QC Qualifiers :***

QR-04 : Duplicate results exceeds RPD limits due to non-homogeneous matrix.

**Sample Data Revisions**

None

**Work Order Revisions / Comments:**

None

**Other Report Notes:**

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

Source Result: Data used as source for matrix and duplicate samples

%REC: Percent recovery.

RPD: Relative percent difference.



1823227

Y:\Templates\Asbestos\2013 Site W

Parcel ID: 1823227



dy

2

Laboratory: *Paracel*

Sample Date: 04-Jun-18 Job Number: 00090.005

Quotation#:

Job Reference: Fort George - Blockhouse #1

Contact Name: Lisa Tappay

Contact Email: ltappay@oesn.net

## Chain of Custody Record

1 of 1

## Analysis

HM #	Sample #	Sample ID	Location	Lead	Mercury	Arsenic					Results By:
P01	00090.005.B1-P01	Grey Paint	Exterior	X	X	X	<i>Zigzag bag</i>				<input type="checkbox"/> 4 hour <input type="checkbox"/> 24 hour <input type="checkbox"/> 2 B Days <input type="checkbox"/> 3 B Days <input checked="" type="checkbox"/> 5 B Days <input type="checkbox"/> Other:
<i>P02</i>	00090.005.B1-P02	White Paint	Ground Floor	X	X	X					

Comments:

Method of Delivery: *P/U*

☒ Positive stop on analyses identified above with "\*\*"

Total # samples shipped: 2

Relinquished By (Print & Sign):  
 Kris Douglas *K. Douglas*

Received by Driver/Depot:  
*B. Benton (Niagara)*

Received at Lab:  
*hah*

Verified By:  
*hah*

Date/Time: June 4, 2018

Date/Time: *June 4/18 3:45 pm*

Date/Time: *5/6/18 10:41*

Date/Time: *5/6/18 12:44*



## Ontario Environmental &amp; Safety Network Ltd.

1783 Highway 20, RR#2, Allanburg, Ontario Canada L0S 1A0 Tel: 1-888-271-2111 Fax: 905-988-1910 www.oesn.net

## Certificate of Analysis

### Ontario Environmental & Safety Network Ltd. (St.)

184 Scott Street, Unit 8 & 9  
St. Catharines, ON L2N 1H1  
Attn: Lisa Tappay

Client PO: Fort George - Blockhouse #2  
Project: 00090.005  
Custody:

Report Date: 7-Jun-2018  
Order Date: 4-Jun-2018

**Order #: 1823224**

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1823224-01	00090.005.B2-P01, White Paint
1823224-02	00090.005.B2-P02, Grey Paint

Approved By:



Dale Robertson, BSc  
Laboratory Director

Certificate of Analysis

Client: Ontario Environmental &amp; Safety Network Ltd. (St.)

Client PO: Fort George - Blockhouse #2

Report Date: 07-Jun-2018

Order Date: 4-Jun-2018

Project Description: 00090.005

## Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Mercury by CVAA	EPA 7471B - CVAA, digestion	6-Jun-18	6-Jun-18
Metals, ICP-MS	EPA 6020 - Digestion - ICP-MS	7-Jun-18	7-Jun-18

Certificate of Analysis

Client: Ontario Environmental & Safety Network Ltd. (St.)

Client PO: Fort George - Blockhouse #2

Report Date: 07-Jun-2018

Order Date: 4-Jun-2018

Project Description: 00090.005

Client ID:	00090.005.B2-P01, White Paint	00090.005.B2-P02, Grey Paint	-	-
Sample Date:	06/04/2018 00:00	06/04/2018 00:00	-	-
Sample ID:	1823224-01	1823224-02	-	-
MDL/Units	Paint	Paint	-	-

**Metals**

Arsenic	50 ug/g	<50	<50	-	-
Lead	5 ug/g	1090	10	-	-
Mercury	2 ug/g	25	<2	-	-

Certificate of Analysis

Report Date: 07-Jun-2018

Client: Ontario Environmental &amp; Safety Network Ltd. (St.)

Order Date: 4-Jun-2018

Client PO: Fort George - Blockhouse #2

Project Description: 00090.005

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	---------------	------	------------	-----	-----------	-------

**Metals**

Arsenic	ND	50	ug/g						
Lead	ND	5	ug/g						
Mercury	ND	2	ug/g						

Certificate of Analysis

Report Date: 07-Jun-2018

Client: Ontario Environmental & Safety Network Ltd. (St.)

Order Date: 4-Jun-2018

Client PO: Fort George - Blockhouse #2

Project Description: 00090.005

### Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Metals</b>									
Arsenic	ND	50	ug/g	ND			0.0	50	
Lead	829	5	ug/g	834			0.6	50	
Mercury	18	2	ug/g	11			47.1	30	QR-04

Certificate of Analysis

Report Date: 07-Jun-2018

Client: Ontario Environmental & Safety Network Ltd. (St.)

Order Date: 4-Jun-2018

Client PO: Fort George - Blockhouse #2

Project Description: 00090.005

### Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Metals</b>									
Arsenic	53.2		ug/L	ND	106	70-130			
Lead	86.9		ug/L	33.4	107	70-130			
Mercury	31	2	ug/g	11	129	70-130			

Certificate of Analysis

Report Date: 07-Jun-2018

Client: Ontario Environmental & Safety Network Ltd. (St.)

Order Date: 4-Jun-2018

Client PO: Fort George - Blockhouse #2

Project Description: 00090.005

**Qualifier Notes:**

***QC Qualifiers :***

QR-04 : Duplicate results exceeds RPD limits due to non-homogeneous matrix.

**Sample Data Revisions**

None

**Work Order Revisions / Comments:**

None

**Other Report Notes:**

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

Source Result: Data used as source for matrix and duplicate samples

%REC: Percent recovery.

RPD: Relative percent difference.



3



1783 Highway 20, RR#2, Allanburg, Ontario Canada L0S 1A0 Tel: 1-888-271-2111 Fax: 905-988-1910 [www.oesn.net](http://www.oesn.net)

## Certificate of Analysis

**Ontario Environmental & Safety Network Ltd. (St.)**

184 Scott Street, Unit 8 & 9  
St. Catharines, ON L2N 1H1  
Attn: Lisa Tappay

Client PO: Fort George - Blockhouse #4  
Project: 00090.005  
Custody:

Report Date: 7-Jun-2018  
Order Date: 4-Jun-2018

**Order #: 1823219**

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

**Paracel ID**  
1823219-01

**Client ID**  
00090.005.B4-P01, Red Paint

Approved By:



Dale Robertson, BSc  
Laboratory Director

Certificate of Analysis

Report Date: 07-Jun-2018

Client: Ontario Environmental &amp; Safety Network Ltd. (St.)

Order Date: 4-Jun-2018

Client PO: Fort George - Blockhouse #4

Project Description: 00090.005

## Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Mercury by CVAA	EPA 7471B - CVAA, digestion	6-Jun-18	6-Jun-18
Metals, ICP-MS	EPA 6020 - Digestion - ICP-MS	7-Jun-18	7-Jun-18

Certificate of Analysis

Client: Ontario Environmental & Safety Network Ltd. (St.)

Client PO: Fort George - Blockhouse #4

Report Date: 07-Jun-2018

Order Date: 4-Jun-2018

Project Description: 00090.005

Client ID:	00090.005.B4-P01, Red Paint	-	-	-
Sample Date:	06/04/2018 00:00	-	-	-
Sample ID:	1823219-01	-	-	-
MDL/Units	Paint	-	-	-

**Metals**

Arsenic	50 ug/g	<50	-	-	-
Lead	5 ug/g	1560	-	-	-
Mercury	2 ug/g	13	-	-	-

Certificate of Analysis

Report Date: 07-Jun-2018

Client: Ontario Environmental &amp; Safety Network Ltd. (St.)

Order Date: 4-Jun-2018

Client PO: Fort George - Blockhouse #4

Project Description: 00090.005

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	---------------	------	------------	-----	-----------	-------

**Metals**

Arsenic	ND	50	ug/g						
Lead	ND	5	ug/g						
Mercury	ND	2	ug/g						

Certificate of Analysis

Report Date: 07-Jun-2018

Client: Ontario Environmental & Safety Network Ltd. (St.)

Order Date: 4-Jun-2018

Client PO: Fort George - Blockhouse #4

Project Description: 00090.005

### Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Metals</b>									
Arsenic	ND	50	ug/g	ND			0.0	50	
Lead	829	5	ug/g	834			0.6	50	
Mercury	18	2	ug/g	11			47.1	30	QR-04

Certificate of Analysis

Report Date: 07-Jun-2018

Client: Ontario Environmental & Safety Network Ltd. (St.)

Order Date: 4-Jun-2018

Client PO: Fort George - Blockhouse #4

Project Description: 00090.005

### Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Metals</b>									
Arsenic	53.2		ug/L	ND	106	70-130			
Lead	86.9		ug/L	33.4	107	70-130			
Mercury	31	2	ug/g	11	129	70-130			

Certificate of Analysis

Report Date: 07-Jun-2018

Client: Ontario Environmental & Safety Network Ltd. (St.)

Order Date: 4-Jun-2018

Client PO: Fort George - Blockhouse #4

Project Description: 00090.005

**Qualifier Notes:**

***QC Qualifiers :***

QR-04 : Duplicate results exceeds RPD limits due to non-homogeneous matrix.

**Sample Data Revisions**

None

**Work Order Revisions / Comments:**

None

**Other Report Notes:**

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

Source Result: Data used as source for matrix and duplicate samples

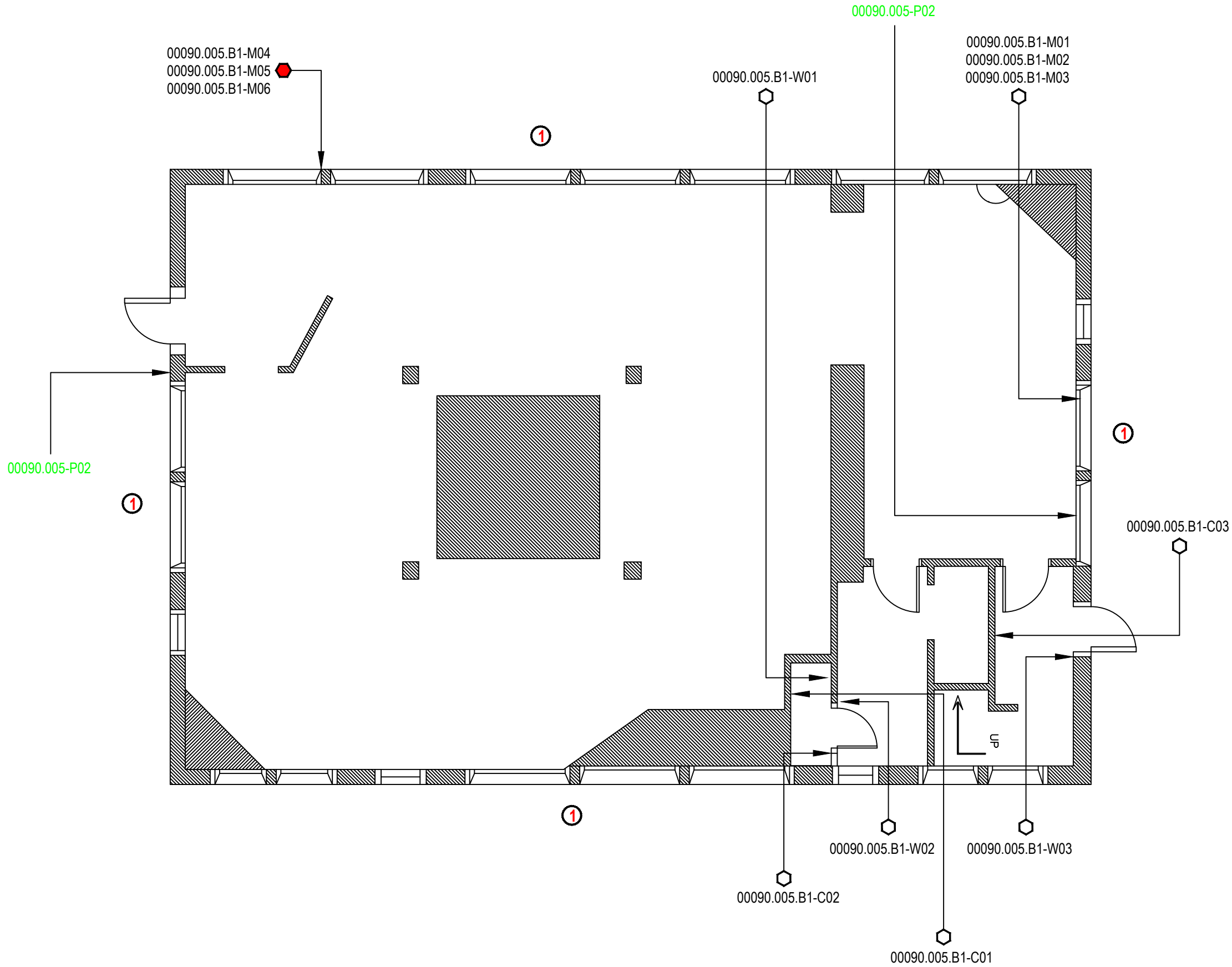
%REC: Percent recovery.

RPD: Relative percent difference.



1783 Highway 20, RR#2, Allanburg, Ontario Canada L0S 1A0 Tel: 1-888-271-2111 Fax: 905-988-1910 [www.oesn.net](http://www.oesn.net)

## Appendix E: Sample Location Drawings



TITLE:

DESIGNATED SUBSTANCES  
AND HAZARDOUS MATERIALS  
SURVEY

CUSTOMER:

PARKS CANADA  
FORT GEORGE

LOCATION:

FORT GEORGE NATIONAL HISTORIC SITE  
51 QUEEN'S PARADE  
NIAGARA-ON-THE-LAKE, ON

LEGEND

1001

OESN LOCATION ID

00090.005-C01

SAMPLE NUMBER

NON ASBESTOS-CONTAINING SAMPLE

ASBESTOS-CONTAINING SAMPLE

ASBESTOS-CONTAINING MATERIALS

1

EXTERIOR WINDOW GLAZING (HM-02)

PAINT RESULTS TABLE

PAINT CODE	PAINT DESCRIPTION	ARSENIC ug/g	LEAD ug/g	MERCURY ug/g
01	GREY (EXT. CLAD)	N1	301	3
02	WHITE (INTERIOR)	N1	172	6

NOTE: N1: Below Method Detection Limit (MDL)

REV.

O

SCALE:

N. T. S.

DRAWN BY:

K. DOUGLAS

CHECKED BY:

S. HUSBAND

DATE:

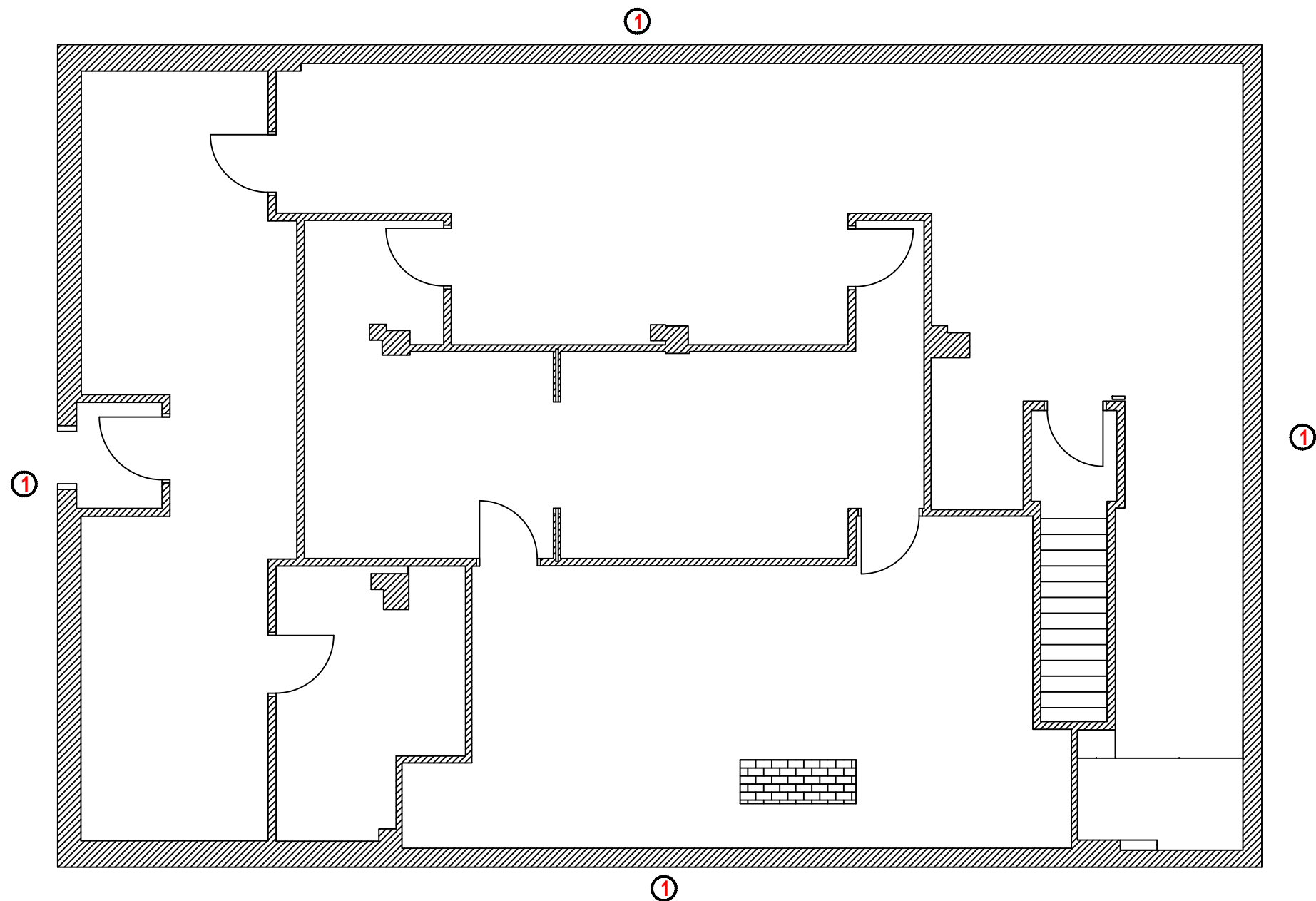
JUNE 2018

OESN JOB No:

00090.005

DWG #:

CP-FORTG-DSS-2018-01  
BLOCKHOUSE #1



TITLE:

DESIGNATED SUBSTANCES  
AND HAZARDOUS MATERIALS  
SURVEY

CUSTOMER:

PARKS CANADA  
FORT GEORGE

LOCATION:

FORT GEORGE NATIONAL HISTORIC SITE  
51 QUEEN'S PARADE  
NIAGARA-ON-THE-LAKE, ON

LEGEND

1001

OESN LOCATION ID

00090.005-C01

SAMPLE NUMBER

NON ASBESTOS-CONTAINING SAMPLE

ASBESTOS-CONTAINING SAMPLE

ASBESTOS-CONTAINING MATERIALS

1

EXTERIOR WINDOW GLAZING (HM-02)

PAINT RESULTS TABLE

PAINT CODE	PAINT DESCRIPTION	ARSENIC ug/g	LEAD ug/g	MERCURY ug/g
01	GREY (EXT. CLAD)	N1	301	3
02	WHITE (INTERIOR)	N1	172	6

NOTE: N1: Below Method Detection Limit (MDL)

REV.

0

SCALE:

N. T. S.

DRAWN BY:

K. DOUGLAS

CHECKED BY:

S. HUSBAND

DATE:

JUNE 2018

OESN JOB No:

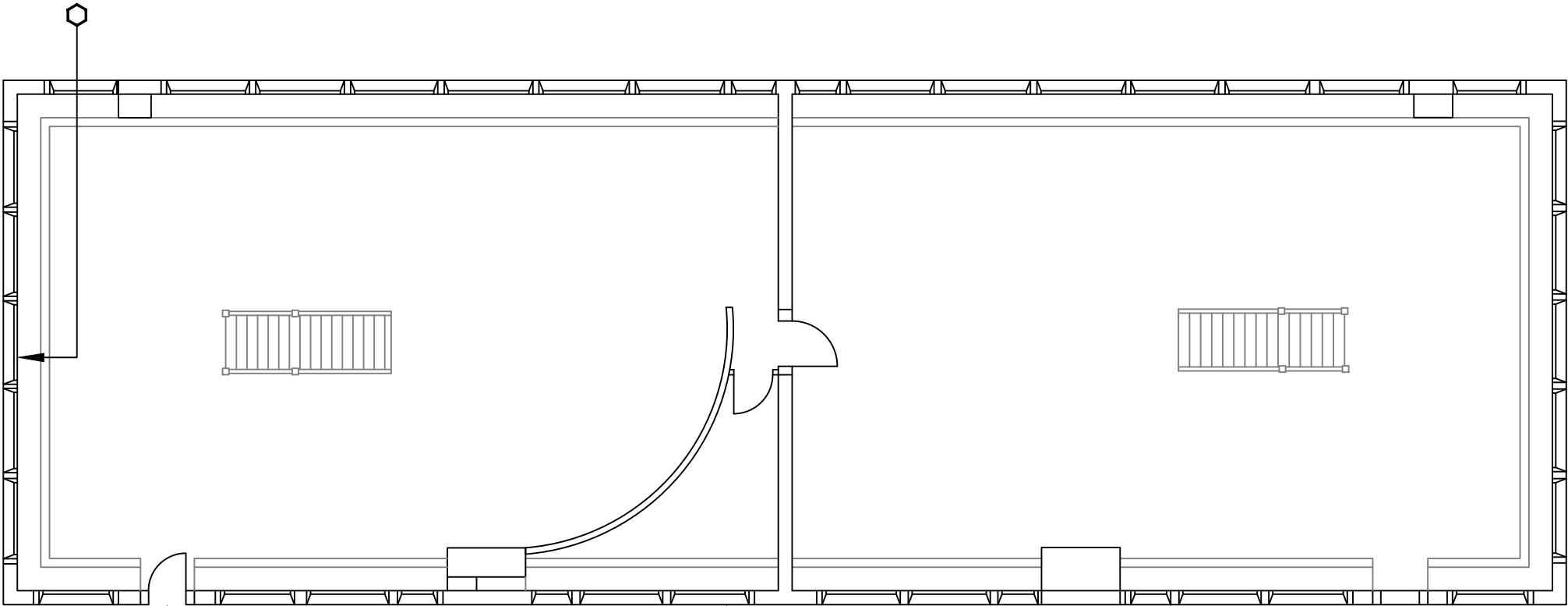
00090.005

DWG #:

CP-FORTG-DSS-2018-02

BLOCKHOUSE #1

00090.005.B2-M01  
00090.005.B2-M02  
00090.005.B2-M03



00090.005.B2-P01

00090.005.B2-M04  
00090.005.B2-M05  
00090.005.B2-M06

00090.005.B2-P02

TITLE:  
**DESIGNATED SUBSTANCES  
AND HAZARDOUS MATERIALS  
SURVEY**

CUSTOMER:  
**PARKS CANADA  
FORT GEORGE**

LOCATION:  
**FORT GEORGE NATIONAL HISTORIC SITE  
51 QUEEN'S PARADE  
NIAGARA-ON-THE-LAKE, ON**

**LEGEND**

1001 OESN LOCATION ID

00090.005-C01 SAMPLE NUMBER

⬡ NON ASBESTOS-CONTAINING SAMPLE

⬢ ASBESTOS-CONTAINING SAMPLE



**ASBESTOS-CONTAINING MATERIALS**

NO MATERIALS SUBMITTED FOR TESTING CONTAIN ASBESTOS

**PAINT RESULTS TABLE**

PAINT CODE	PAINT DESCRIPTION	ARSENIC ug/g	LEAD ug/g	MERCURY ug/g
01	GREY (EXT. CLAD)	N1	1090	25
02	WHITE (INTERIOR)	N1	10	N1

**NOTE:** N1: Below Method Detection Limit (MDL)



REV. O	SCALE: N. T. S.
DRAWN BY: K. DOUGLAS	CHECKED BY: S. HUSBAND
DATE: JUNE 2018	
OESN JOB No: 00090.005	
DWG #: CP-FORTG-DSS-2018-03	
BLOCKHOUSE #2	

TITLE:

DESIGNATED SUBSTANCES  
AND HAZARDOUS MATERIALS  
SURVEY

CUSTOMER:

PARKS CANADA  
FORT GEORGE

LOCATION:

FORT GEORGE NATIONAL HISTORIC SITE  
51 QUEEN'S PARADE  
NIAGARA-ON-THE-LAKE, ON


LEGEND

1001


OESN LOCATION ID

00090.005-C01

SAMPLE NUMBER



NON ASBESTOS-CONTAINING SAMPLE





ASBESTOS-CONTAINING SAMPLE


ASBESTOS-CONTAINING MATERIALS


NO MATERIALS SUBMITTED FOR TESTING CONTAIN  
ASBESTOS

PAINT RESULTS TABLE

PAINT CODE	PAINT DESCRIPTION	ARSENIC ug/g	LEAD ug/g	MERCURY ug/g
	GREY (EXT. CLAD)	N1	1090	25
	WHITE (INTERIOR)	N1	10	N1

NOTE: N1: Below Method Detection Limit (MDL)





REV.

O

SCALE:

N. T. S.

DRAWN BY:

K. DOUGLAS

CHECKED BY:

S. HUSBAND

DATE:

JUNE 2018

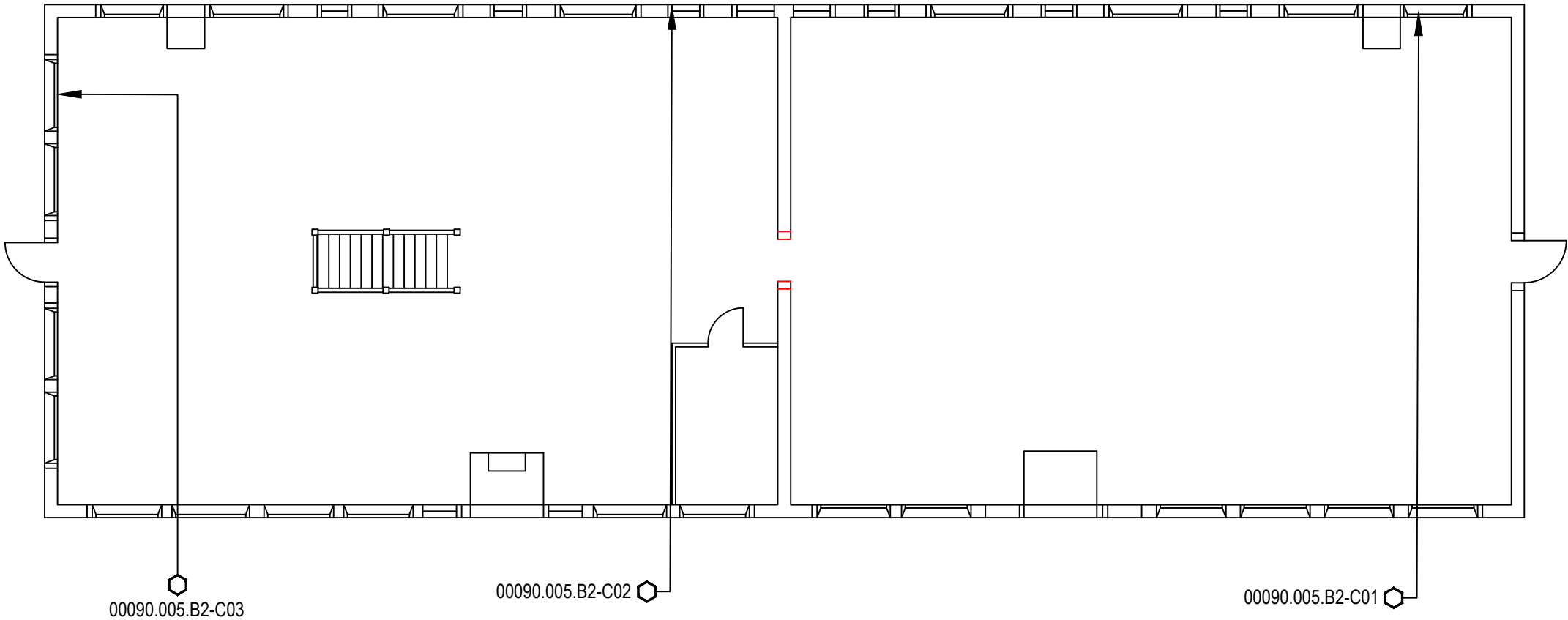
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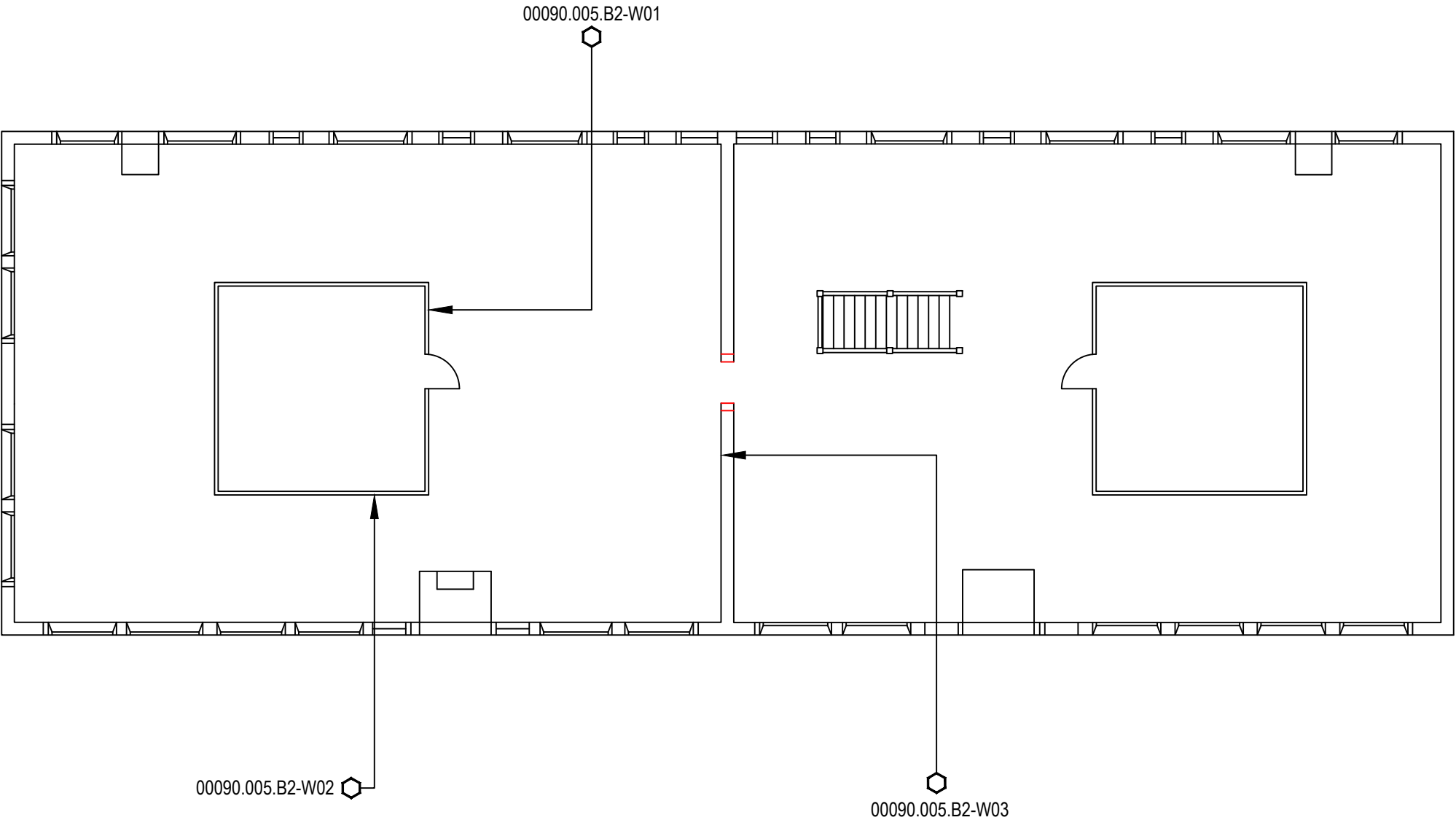
00090.005

DWG #:

CP-FORTG-DSS-2018-04

BLOCKHOUSE #2





TITLE:

DESIGNATED SUBSTANCES  
AND HAZARDOUS MATERIALS  
SURVEY

CUSTOMER:

PARKS CANADA  
FORT GEORGE

LOCATION:

FORT GEORGE NATIONAL HISTORIC SITE  
51 QUEEN'S PARADE  
NIAGARA-ON-THE-LAKE, ON

LEGEND

1001

OESN LOCATION ID

00090.005-C01

SAMPLE NUMBER

NON ASBESTOS-CONTAINING SAMPLE

ASBESTOS-CONTAINING SAMPLE

ASBESTOS-CONTAINING MATERIALS

NO MATERIALS SUBMITTED FOR TESTING CONTAIN ASBESTOS

PAINT RESULTS TABLE

PAINT CODE	PAINT DESCRIPTION	ARSENIC ug/g	LEAD ug/g	MERCURY ug/g
	GREY (EXT. CLAD)	N1	1090	25
	WHITE (INTERIOR)	N1	10	N1

NOTE: N1: Below Method Detection Limit (MDL)

REV.0

SCALE:N. T. S.

DRAWN BY:K. DOUGLAS

CHECKED BY:S. HUSBAND

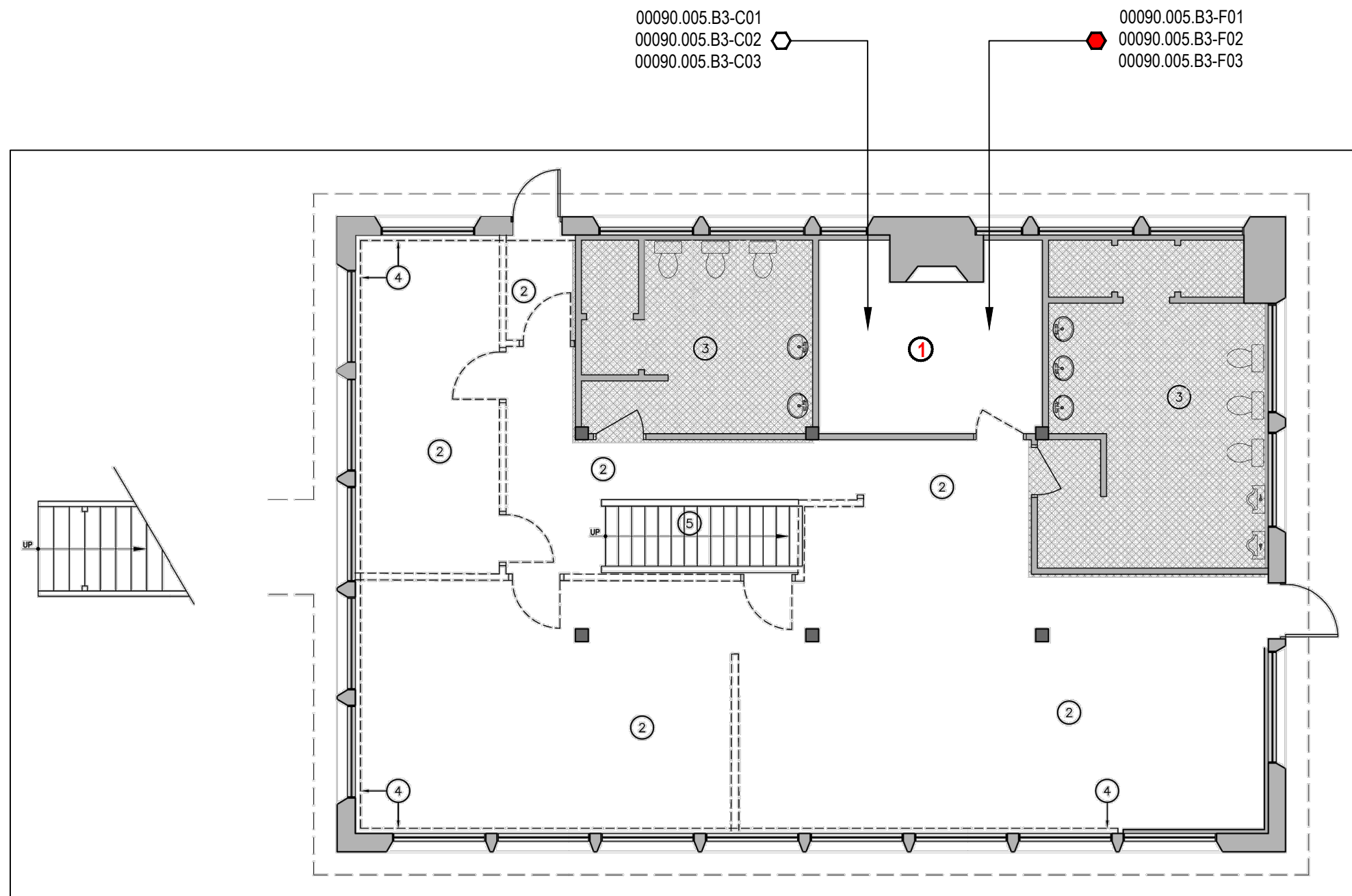
DATE:JUNE 2018

OESN JOB No:00090.005

DWG #:CP-FORTG-DSS-2018-05

BLOCKHOUSE #2





TITLE:  
**DESIGNATED SUBSTANCES  
AND HAZARDOUS MATERIALS  
SURVEY**

CUSTOMER:  
**PARKS CANADA  
FORT GEORGE**

LOCATION:  
**FORT GEORGE NATIONAL HISTORIC SITE  
51 QUEEN'S PARADE  
NIAGARA-ON-THE-LAKE, ON**

**LEGEND**

1001 OESN LOCATION ID  
00090.005-C01 SAMPLE NUMBER  
NON ASBESTOS-CONTAINING SAMPLE  
ASBESTOS-CONTAINING SAMPLE

**ASBESTOS-CONTAINING MATERIALS**

1 12 " VINYL FLOOR TILE - WHITE WITH BLACK  
STREAK (HM-01)

ONTARIO ENVIRONMENTAL  
OESN  
& SAFETY NETWORK

Canada

REV. 0 SCALE: N. T. S.

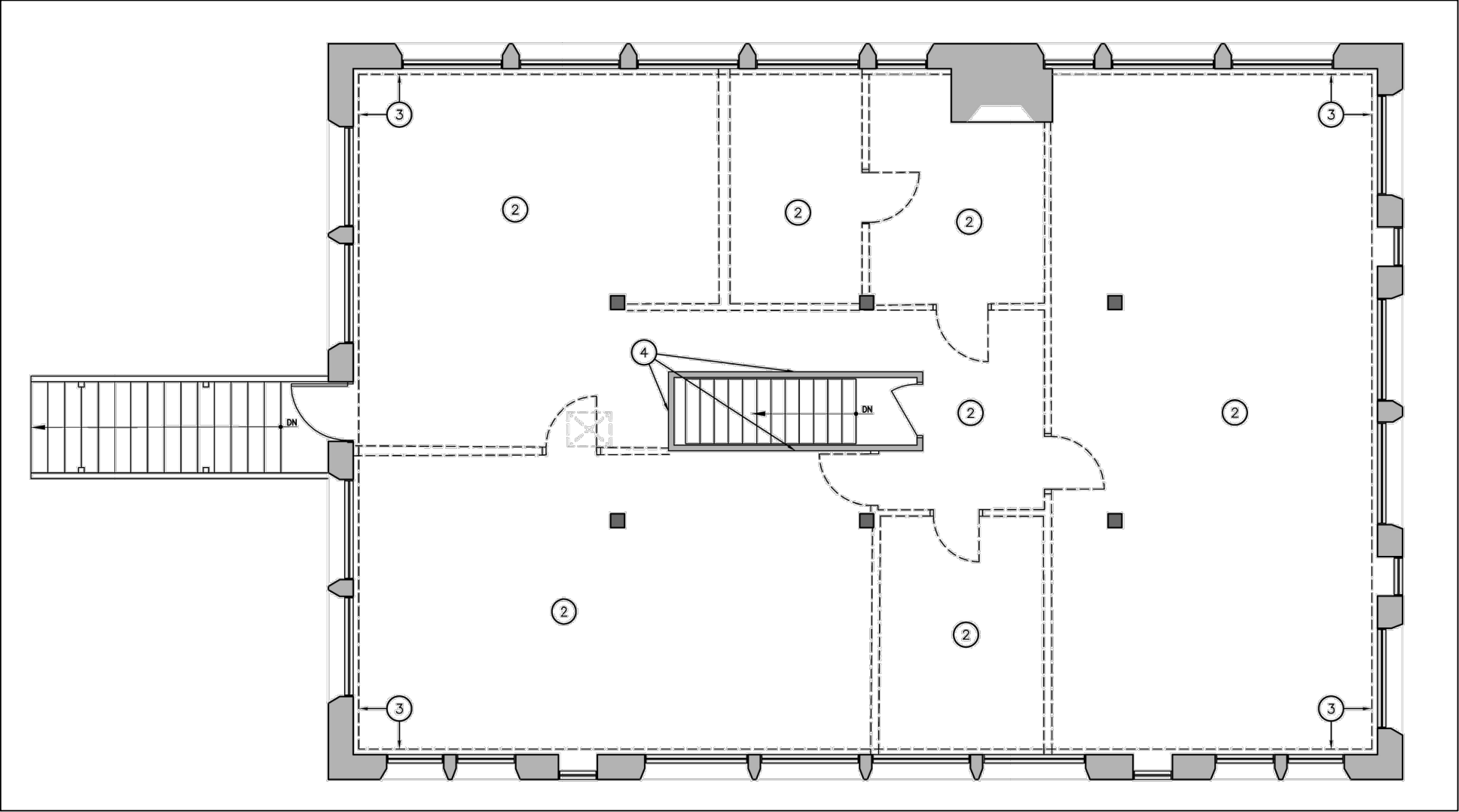
DRAWN BY: K. DOUGLAS CHECKED BY: S. HUSBAND

DATE: JUNE 2018

OESN JOB No: 00090.005

DWG #: CP-FORTG-DSS-2018-06  
BLOCKHOUSE #3





TITLE:  
DESIGNATED SUBSTANCES  
AND HAZARDOUS MATERIALS  
SURVEY

CUSTOMER:  
PARKS CANADA  
FORT GEORGE

LOCATION:  
FORT GEORGE NATIONAL HISTORIC SITE  
51 QUEEN'S PARADE  
NIAGARA-ON-THE-LAKE, ON



**LEGEND**

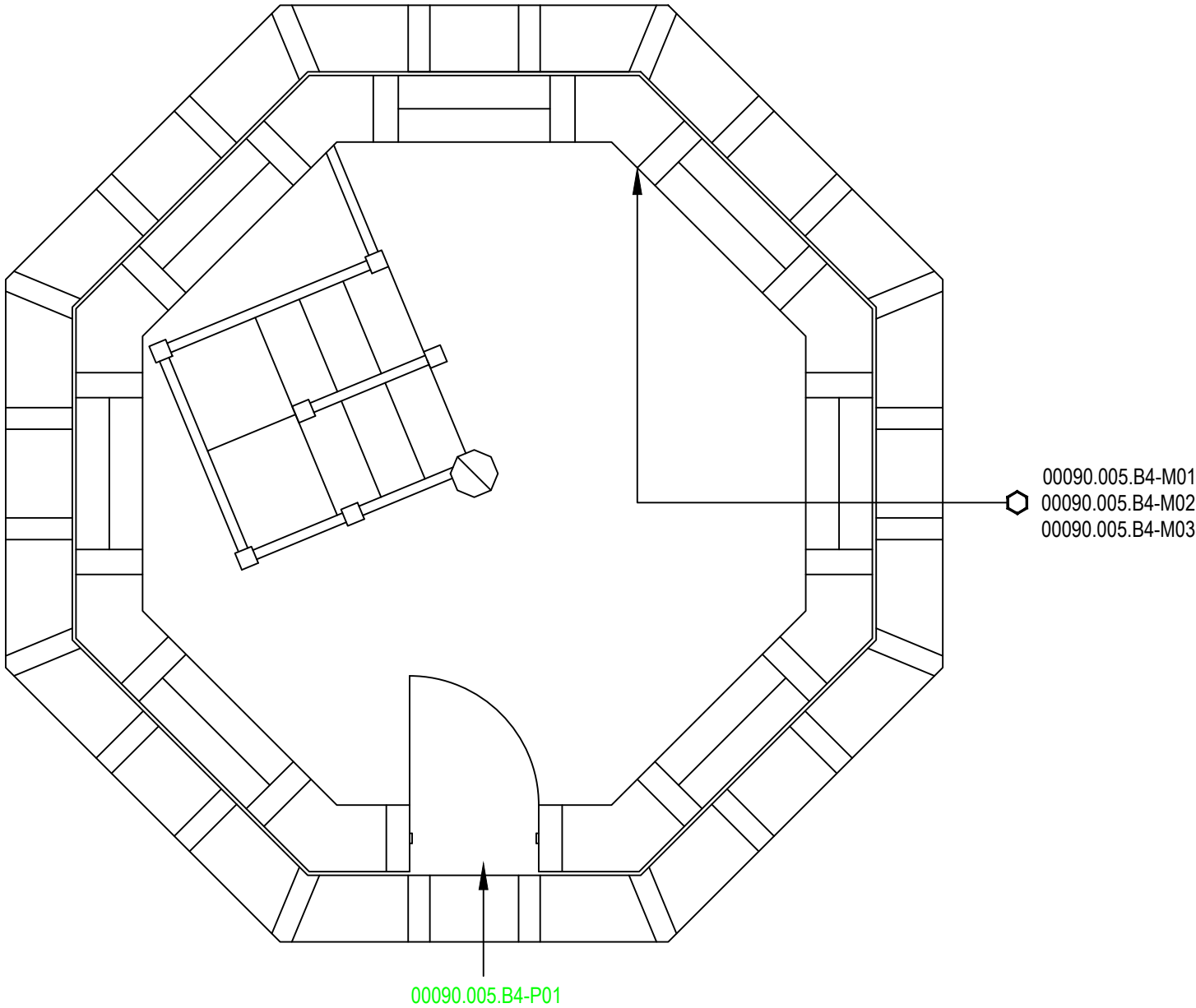
1001 OESN LOCATION ID  
00090.005-C01 SAMPLE NUMBER

NON ASBESTOS-CONTAINING SAMPLE  
ASBESTOS-CONTAINING SAMPLE

**ASBESTOS-CONTAINING MATERIALS**

1 12 " VINYL FLOOR TILE - WHITE WITH BLACK STREAK (HM-01)

			
REV.	0	SCALE:	N. T. S.
DRAWN BY: K. DOUGLAS		CHECKED BY: S. HUSBAND	
DATE:		JUNE 2018	
OESN JOB No:		00090.005	
DWG #:		CP-FORTG-DSS-2018-07	
BLOCKHOUSE #3			



TITLE:  
**DESIGNATED SUBSTANCES  
AND HAZARDOUS MATERIALS  
SURVEY**

CUSTOMER:  
**PARKS CANADA  
FORT GEORGE**

LOCATION:  
**FORT GEORGE NATIONAL HISTORIC SITE  
51 QUEEN'S PARADE  
NIAGARA-ON-THE-LAKE, ON**

**LEGEND**

1001 OESN LOCATION ID

00090.005-C01 SAMPLE NUMBER

⬡ NON ASBESTOS-CONTAINING SAMPLE

⬢ ASBESTOS-CONTAINING SAMPLE



**ASBESTOS-CONTAINING MATERIALS**

NO MATERIALS SUBMITTED FOR TESTING CONTAIN ASBESTOS

**PAINT RESULTS TABLE**

PAINT CODE	PAINT DESCRIPTION	ARSENIC ug/g	LEAD ug/g	MERCURY ug/g
01	RED (MAN DOOR)	N1	1560	13

**NOTE:** N1: Below Method Detection Limit (MDL)



REV.	O	SCALE:	N. T. S.
DRAWN BY:	K. DOUGLAS	CHECKED BY:	S. HUSBAND
DATE:	JUNE 2018		
OESN JOB No:	00090.005		
DWG #:	CP-FORTG-DSS-2018-08		
BLOCKHOUSE #4			

## Appendix F: References

## REFERENCES

This designated substance assessment was prepared referencing laws and guidelines cited below.

1. Ontario Occupational Health & Safety Act, R.S.O. 1990 c.01.
2. Ontario Regulation for Construction Projects 213/91 as amended.
3. Ontario Regulation respecting Asbestos on Construction Projects and in Buildings and Repair Operations 278/05 as amended.
4. Ontario Regulation for Designated Substances 490/09 as amended.
5. U.S. Department of Housing & Urban Development. Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing. Office of Healthy Homes and Lead Hazard Control, 2<sup>nd</sup> ed. July 2012.
6. Occupational Safety and Health Administration. Standard Interpretations, Standard number 1926.62.
7. Surface Coating Materials Regulations SOR/2005-109 (June 2011) under Canada Consumer Product Safety Act and pursuant to Section 5 of the Hazardous Products Act (R.S., c.24 (3<sup>rd</sup> Supp.), s.1).
8. R.R.O. 1990, Regulation 347 General – Waste Management under Environmental Protection Act (as amended).
9. Ontario Ministry of the Environment and Climate Change. Registration Guidance Manual for Generators of Liquid Industrial and Hazardous Waste (January 2016).

## Appendix G: Limitations

Results are submitted pursuant to OESN's current terms and conditions of sale, including the company's standard warrant and limitation of liability provisions; and no responsibility is assumed for the manner in which the results are used or interpreted.

The cement pipe located on the First Level Parking Garage (above the suspended ceiling tiles) was not sampled to avoid damaging the integrity and risking exposure to workers and building occupants. It is difficult to safely collect a sample because heavy abrasive techniques are required to collect even the smallest amount. Historically, this material is known to contain up to 25% chrysotile asbestos. The pipe may also contain the mineral crocidolite.

The findings and conclusions presented in this report were based, in part, on visual observations of the building. Our conclusions cannot and are not extended to include those portions of the building which were not reasonably available, in OESN's opinion, for direct observation.

Where testing was performed, it was carried out in accordance with the scope of our contract. Due to a possible lack of information, OESN reserves the right to modify any part of the assessment regarding the materials within the building. It should be noted that this report was not exhaustive for every possible contaminant and therefore other compounds or materials may be present in the site environment.

This report is for the sole use of the party to whom it is addressed unless expressly stated otherwise in the report or contract. Any use which a third party makes of the report, in whole or in part, or any reliance thereon, or decisions made based on any information or conclusions in the report, is the sole responsibility of such third party.

OESN accepts no responsibility whatsoever for damages or loss of any nature suffered by any such third party as a result of actions taken or not taken or decisions made in reliance on the report.

Please feel free to contact our office if there are any questions regarding the content of this report, 1 888 271 2111.

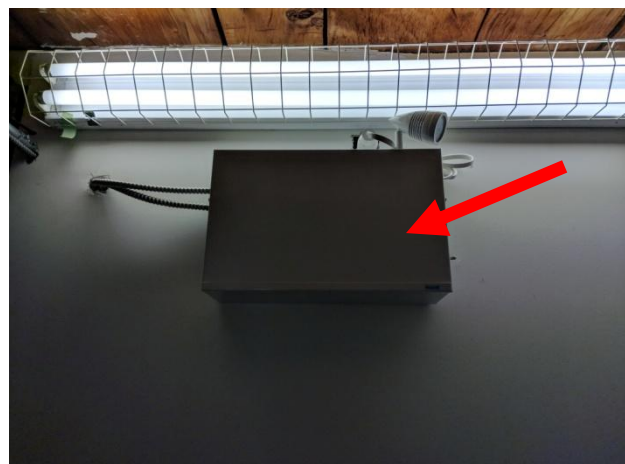
## Appendix H: Other Designated Substances/Hazardous Materials Observed

APPENDIX H - OTHER DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS PHOTO LOG

Block House #1



**Notes:** Emergency lighting system observed within the subject building. Emergency lighting systems contain (1) one or (2) two lead acid batteries. Several styles of emergency lighting systems were observed in the subject building.



**Notes:** Emergency lighting system observed within the subject building. Emergency lighting systems contain (1) one or (2) two lead acid batteries. Several styles of emergency lighting systems were observed in the subject building.



**Notes:** Emergency lighting system observed within the subject building. Emergency lighting systems contain (1) one or (2) two lead acid batteries. Several styles of emergency lighting systems were observed in the subject building.



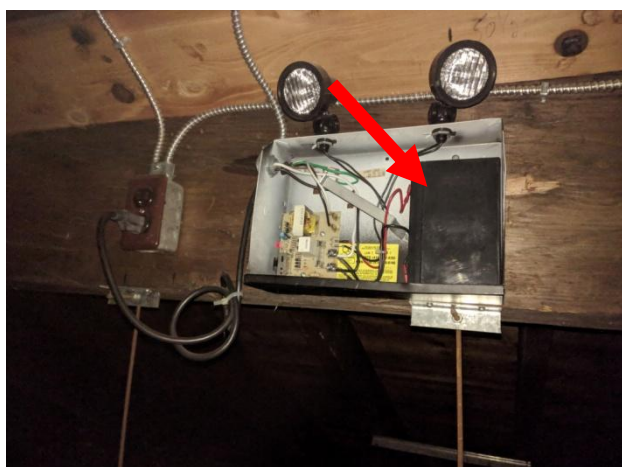


**Notes:** Fluorescent lighting systems are present. Lighting systems contain mercury light tubes and potentially PCB containing light ballasts. At the time of evaluation, OESN did not access the lighting systems to observe ballast codes.



**Notes:** Fluorescent lighting systems are present. Lighting systems contain mercury light tubes and potentially PCB containing light ballasts. At the time of evaluation, OESN did not access the lighting systems to observe ballast codes.

#### Block House #2



**Notes:** Emergency lighting system observed within the subject building. Emergency lighting systems contain (1) one or (2) two lead acid batteries. Several styles of emergency lighting systems were observed in the subject building.



**Notes:** Emergency lighting system observed within the subject building. Emergency lighting systems contain (1) one or (2) two lead acid batteries. Several styles of emergency lighting systems were observed in the subject building.

**Block House #3**



**Notes:** Fluorescent lighting systems are present. Lighting systems contain mercury light tubes and potentially PCB containing light ballasts. At the time of evaluation, OESN did not access the lighting systems to observe ballast codes.